

Table E1

Source Ground Water VOCs Analytical Results Summary

Columbia Falls Aluminum Company

Aluminum Smelter Facility

Columbia Falls, Flathead County, Montana

Analyte	CAS NO	Units	SCDM	MCL/MCLG	SCDM RDSC	SCDM CRSC	Montana Human Health	Location Sample ID	Background Wells		On-Site Wells							
									Date	Type	MW-01 CF-GW-MW-01 9/26/2013 Field Sample	MW-01 CF-GW-MW-18 9/26/2013 Field Duplicate	MW-02 CF-GW-MW-02 9/25/2013 Field Sample	MW-03 CF-GW-MW-03 9/30/2013 Field Sample	MW-04 CF-GW-MW-04 9/25/2013 Field Sample	MW-05 CF-GW-MW-05 9/25/2013 Field Sample	MW-05 CF-GW-MW-16 9/25/2013 Field Duplicate	MW-06 CF-GW-MW-06 9/26/2013 Field Sample
VOCs																		
1,1,1-Trichloroethane	71-55-6	ug/L	200	NE	NE	200	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,1,2,2-Tetrachloroethane	79-34-5	ug/L	NE	NE	0.43	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,1,2-Trichloroethane	79-00-5	ug/L	3	150	1.5	3	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,1-Dichloroethane	75-34-3	ug/L	NE	3700	NE	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,1-Dichloroethene	75-35-4	ug/L	7	1800	NE	7	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,2,3-Trichlorobenzene	87-61-6	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,2,4-Trichlorobenzene	120-82-1	ug/L	70	360	NE	70	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,2-Dibromo-3-chloropropane	96-12-8	ug/L	0.2	NE	0.061	0.2	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,2-Dibromoethane	106-93-4	ug/L	NE	NE	0.001	0.004	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,2-Dichlorobenzene	95-50-1	ug/L	NE	NE	NE	600	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,2-Dichloroethane	107-06-2	ug/L	5	NE	0.94	4	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,2-Dichloropropane	78-87-5	ug/L	5	NE	1.3	5	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,3-Dichlorobenzene	541-73-1	ug/L	NE	NE	NE	600	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
1,4-Dichlorobenzene	106-46-7	ug/L	75	NE	3.5	75	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
2-Butanone	78-93-3	ug/L	NE	22000	NE	NE	--	5U	5U	25R	50U	5R	5R	5R	5U	5U		
2-Hexanone	591-78-6	ug/L	NE	NE	NE	NE	--	5U	5U	25R	50U	5R	5R	5R	5U	5U		
4-Methyl-2-pentanone	108-10-1	ug/L	NE	2900	NE	NE	--	5U	5U	25R	50U	5R	5R	5R	5U	5U		
Acetone	67-64-1	ug/L	NE	33000	NE	NE	--	5U	5U	25R	50U	5R	5R	5R	5U	5U		
Benzene	71-43-2	ug/L	5	150	1.5	5	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Bromochloromethane	74-97-5	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Bromodichloromethane	75-27-4	ug/L	NE	730	1.4	10	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Bromoform	75-25-2	ug/L	NE	NE	80	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U			
Bromomethane	74-83-9	ug/L	NE	51	NE	10	--	0.5UJ	0.5UJ	2.5R	5U	0.5R	0.5R	0.5R	0.5UJ	0.5U		
Carbon disulfide	75-15-0	ug/L	NE	3700	NE	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Carbon tetrachloride	56-23-5	ug/L	5	26	0.66	3	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Chlorobenzene	108-90-7	ug/L	100	730	NE	100	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Chloroethane	75-00-3	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Chloroform	67-66-3	ug/L	NE	360	NE	70	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Chloromethane	74-87-3	ug/L	NE	NE	NE	30	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
cis-1,2-Dichloroethene	156-59-2	ug/L	70	360	NE	70	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
cis-1,3-Dichloropropene	10061-01-5	ug/L	NE	NE	NE	4	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5UJ	0.5U		
Cyclohexane	110-82-7	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Dibromochloromethane	124-48-1	ug/L	NE	NE	NE	4	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Dichlorodifluoromethane	75-71-8	ug/L	NE	NE	NE	1000	--	0.5U	0.5U	55R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Ethylbenzene	100-41-4	ug/L	700	3700	NE	700	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Isopropylbenzene	98-82-8	ug/L	NE	3700	NE	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
m,p-Xylene	179601-23-1	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Methyl acetate	79-20-9	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Methyl tert-butyl ether	1634-04-4	ug/L	NE	NE	NE	30	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Methylcyclohexane	108-87-2	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
Methylene chloride	75-09-2	ug/L	5	2200	11	5	--	0.5U	0.5U	2.5R	5U	0.5R	0.5R	0.5R	0.5U	0.5U		
o-Xylene	95-47-6	ug/L	10000	73000	NE	10000	--	0.5U										

Table E2

Source Ground Water SVOCs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO.	Units	MCL/MCLG	SCDM	SCDM RDSC	SCDM CRSC	Montana	Human Health	Location	Sample ID	Background Wells		On-Site Wells						
											Date	Type	MW-01 CF-GW-MW-01 9/26/2013 Field Sample	MW-01 CF-GW-MW-1B 9/26/2013 Field Duplicate	MW-02 CF-GW-MW-02 9/25/2013 Field Sample	MW-03 CF-GW-MW-03 9/30/2013 Field Sample	MW-04 CF-GW-MW-04 9/25/2013 Field Sample	MW-05 CF-GW-MW-05 9/25/2013 Field Sample	MW-06 CF-GW-MW-06 9/26/2013 Field Sample
SVOCs																			
1,1'-Biphenyl	92-52-4	ug/L	NE	NE	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/L	NE	11	NE	2	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2,2'-Oxybis(1-chloropropane)	108-60-1	ug/L	NE	NE	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2,3,4,6-Tetrachlorophenol	58-90-2	ug/L	NE	NE	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2,4,5-Trichlorophenol	95-95-4	ug/L	NE	NE	NE	1800	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2,4,6-Trichlorophenol	88-06-2	ug/L	NE	NE	7.7	30	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2,4-Dichlorophenol	120-83-2	ug/L	NE	110	NE	77	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2,4-Dimethylphenol	105-67-9	ug/L	NE	730	NE	380	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2,4-Dinitrophenol	51-28-5	ug/L	NE	NE	NE	69	NE	NE	--		10U	10U	10U	10R	10U	10U	10U	10U	10U
2,4-Dinitrotoluene	121-14-2	ug/L	NE	NE	NE	1.1	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2,6-Dinitrotoluene	606-20-2	ug/L	NE	NE	NE	0.5	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2-Chloronaphthalene	91-58-7	ug/L	NE	NE	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2-Chlorophenol	95-57-8	ug/L	NE	NE	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2-Methylnaphthalene	91-57-6	ug/L	NE	NE	NE	NE	NE	NE	--		5R	5R	5R	5R	5R	5R	5R	5R	5R
2-Methylphenol	95-48-7	ug/L	NE	NE	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
2-Nitroaniline	88-74-4	ug/L	NE	NE	NE	NE	NE	NE	--		10U	10U	10U	10R	10U	10U	10U	10U	10U
2-Nitrophenol	88-75-5	ug/L	NE	NE	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
3,3'-Dichlorobenzidine	91-94-1	ug/L	NE	NE	NE	0.21	NE	NE	--		5R	5R	5U	5R	5R	5R	5R	5R	5R
3-Nitroaniline	99-09-2	ug/L	NE	NE	NE	NE	NE	NE	--		10U	10U	10U	10R	10U	10U	10U	10U	10U
4,6-Dinitro-2-methylphenol	534-52-1	ug/L	NE	NE	NE	13	NE	NE	--		10U	10U	10U	10R	10U	10U	10U	10U	10U
4-Bromophenyl-phenylether	101-55-3	ug/L	NE	NE	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
4-Chloro-3-methylphenol	59-50-7	ug/L	NE	NE	NE	3000	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
4-Chloroaniline	106-47-8	ug/L	NE	NE	NE	NE	NE	NE	--		5R	5R	5U	5R	5R	5R	5R	5R	5R
4-Chlorophenyl-phenylether	7005-72-3	ug/L	NE	NE	15	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
4-Methylphenol	106-44-5	ug/L	NE	180	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
4-Nitroaniline	100-01-6	ug/L	NE	NE	NE	NE	NE	NE	--		10U	10U	10U	10R	10U	10U	10U	10U	10U
4-Nitrophenol	100-02-7	ug/L	NE	NE	60	NE	NE	NE	--		10U	10U	10U	10R	10U	10U	10U	10U	10U
Acenaphthene	83-32-9	ug/L	NE	2200	NE	670	NE	NE	--		5R	5R	5R	5R	5R	5R	5R	5R	5R
Acenaphthylene	208-96-8	ug/L	NE	NE	NE	NE	NE	NE	--		5R	5R	5R	5R	5R	5R	5R	5R	5R
Acetophenone	98-86-2	ug/L	NE	NE	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
Anthracene	120-12-7	ug/L	NE	11000	NE	2100	NE	NE	--		5R	5R	5R	5R	5R	5R	5R	5R	5R
Atrazine	1912-24-9	ug/L	NE	NE	NE	3	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
Benzaldehyde	100-52-7	ug/L	NE	NE	NE	NE	NE	NE	--		SUJ	SUJ	SUJ	5R	SUJ	SUJ	SUJ	SUJ	SUJ
Benzo(a)anthracene	56-55-3	ug/L	NE	NE	0.12	0.5	NE	NE	--		5R	5R	5R	5R	5R	5R	5R	5R	5R
Benzo(a)pyrene	50-32-8	ug/L	0.2	NE	0.012	0.05	NE	NE	--		5R	5R	5R	5R	5R	5R	5R	5R	5R
Benzo(b)fluoranthene	205-99-2	ug/L	NE	NE	NE	0.05	NE	NE	--		5R	5R	5R	5R	5R	5R	5R	5R	5R
Benzo(g,h,i)perylene	191-24-2	ug/L	NE	NE	NE	NE	NE	NE	--		5R	5R	5R	5R	5R	5R	5R	5R	5R
Benz(k)fluoranthene	207-08-9	ug/L	NE	NE	1.2	5	NE	NE	--		5R	5R	5R	5R	5R	5R	5R	5R	5R
Bis(2-chloroethoxy)methane	111-91-1	ug/L	NE	NE	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
Bis(2-chloroethyl)ether	111-44-4	ug/L	NE	NE	0.3	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
Bis(2-ethylhexyl)phthalate	117-81-7	ug/L	6	730	NE	NE	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
Butylbenzylphthalate	85-68-7	ug/L	NE	7300	NE	1500	NE	NE	--		5U	5U	5U	5R	5U	5U	5U	5U	5U
Caprolactam	105-60-2	ug/L	NE																

Table E3

Source Ground Water PAHs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	SCDM MCL/M CLG	SCDM RDSC	SCDM CRSC	Montana Human Health	Location Sample ID Date Type	Background Wells		On-Site Wells							
								MW-01 CF-GW-MW-01 9/26/2013 Field Sample	MW-01 CF-GW-MW-18 9/26/2013 Field Duplicate	MW-02 CF-GW-MW-02 9/25/2013 Field Sample	MW-03 CF-GW-MW-03 9/30/2013 Field Sample	MW-04 CF-GW-MW-04 9/25/2013 Field Sample	MW-05 CF-GW-MW-05 9/25/2013 Field Sample	MW-05 CF-GW-MW-16 9/25/2013 Field Duplicate	MW-06 CF-GW-MW-06 9/26/2013 Field Sample	MW-07 CF-GW-MW-07 9/26/2013 Field Sample	
SVOC SIM																	
2-Methylnaphthalene	91-57-6	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Acenaphthene	83-32-9	ug/L	NE	2200	NE	670	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Acenaphthylene	208-96-8	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Anthracene	120-12-7	ug/L	NE	11000	NE	2100	--	0.1U	0.1U	0.1U	0.069R	0.1U	0.1U	0.1U	0.1U	0.1U	
Benzo(a)anthracene	56-55-3	ug/L	NE	NE	0.12	0.5	--	0.1U	0.1U	0.1U	0.11J	0.1U	0.1U	0.1U	0.1U	0.1U	
Benzo(a)pyrene	50-32-8	ug/L	0.2	NE	0.012	0.05	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Benzo(b)fluoranthene	205-99-2	ug/L	NE	NE	NE	0.05	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Benzo(g,h,i)perylene	191-24-2	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Benzo(k)fluoranthene	207-08-9	ug/L	NE	NE	1.2	5	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Chrysene	218-01-9	ug/L	NE	NE	12	50	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Dibenz(a,h)anthracene	53-70-3	ug/L	NE	NE	0.012	NE	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Fluoranthene	206-44-0	ug/L	NE	1500	NE	130	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.04J	
Fluorene	86-73-7	ug/L	NE	1500	NE	1100	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	NE	NE	0.12	0.5	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Naphthalene	91-20-3	ug/L	NE	1500	NE	100	--	0.1U	0.1U	0.1U	0.076R	0.19U	0.23U	0.35U	0.1U	0.1U	
Pentachlorophenol	87-86-5	ug/L	1	1100	0.71	1	--	0.2R	0.2R	0.45J	0.69J	0.2R	0.2J	0.19J	0.16J	0.2R	
Phenanthrene	85-01-8	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	
Pyrene	129-00-0	ug/L	NE	1100	NE	830	--	0.1U	0.1U	0.1U	0.1R	0.1U	0.1U	0.1U	0.1U	0.1U	

Notes:

- Bold** The analyte was detected above the method detection limit
J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NE None Established
R The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.

- ug/L microgram(s) per liter
CRSC Cancer Risk Screening Concentration
EPA United States Environmental Protection Agency
MCL Maximum Contaminant Level
MCLG Maximum Contaminant Level Goal
RDSC Reference Dose Screening Concentration
SCDM Superfund Chemical Data Matrix

Table E4

Source Ground Water Pesticides Analytical Results Summary

Columbia Falls Aluminum Company

Aluminum Smelter Facility

Columbia Falls, Flathead County, Montana

Analyte	CAS.NO.	Units	MCL/MCLG	SCDM	SCDM	SCDM	CRSC	Montana Human Health	Location	Sample ID	Date	Background Wells		On-Site Wells						
												MW-01 CF-GW-MW-01	MW-01 CF-GW-MW-01	MW-02 CF-GW-MW-02	MW-03 CF-GW-MW-03	MW-04 CF-GW-MW-04	MW-05 CF-GW-MW-05	MW-05 CF-GW-MW-16	MW-06 CF-GW-MW-06	MW-07 CF-GW-MW-07
												9/26/2013 Field Sample	9/26/2013 Field Duplicate	9/26/2013 Field Sample	9/30/2013 Field Sample	9/25/2013 Field Sample	9/25/2013 Field Sample	9/25/2013 Field Duplicate	9/26/2013 Field Sample	9/26/2013 Field Sample
Pesticides																				
4,4'-DDD	72-54-8	ug/L	NE	NE	0.35	0.0031	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
4,4'-DDE	72-55-9	ug/L	NE	NE	0.25	0.0022	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
4,4'-DDT	50-29-3	ug/L	NE	18	0.25	0.0022	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
ALDRIN	309-00-2	ug/L	NE	1.1	0.005	0.02	--	0.05U	0.05U	0.05U	0.052U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U		
ALPHA-BHC	319-84-6	ug/L	NE	NE	0.014	0.026	--	0.05U	0.05U	0.05U	0.052U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U		
ALPHA-CHLORDANE	5103-71-9	ug/L	NE	18	0.24	1	--	0.05U	0.05U	0.05U	0.052U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U		
BETA-BHC	319-85-7	ug/L	NE	NE	0.047	0.091	--	0.05U	0.05U	0.05U	0.052U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U		
DELTA-BHC	319-86-8	ug/L	NE	NE	NE	NE	--	0.05U	0.05U	0.05U	0.052U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U		
DIELDRIN	60-57-1	ug/L	NE	1.8	0.0053	0.02	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
ENDOSULFAN I	959-98-8	ug/L	NE	220	NE	62	--	0.05U	0.05U	0.05U	0.052U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U		
ENDOSULFAN II	33213-65-9	ug/L	NE	220	NE	62	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
ENDOSULFAN SULFATE	1031-07-8	ug/L	NE	NE	NE	62	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
ENDRIN	72-20-8	ug/L	2	11	NE	2	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
ENDRIN ALDEHYDE	7421-93-4	ug/L	NE	NE	NE	0.29	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
ENDRIN KETONE	53494-70-5	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
GAMMA-BHC (LINDANE)	58-89-9	ug/L	0.2	11	0.066	0.2	--	0.05U	0.05U	0.05U	0.052U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U		
GAMMA-CHLORDANE	5103-74-2	ug/L	NE	NE	NE	NE	--	0.05U	0.05U	0.05U	0.052U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U		
HEPTACHLOR	76-44-8	ug/L	0.4	18	0.019	0.08	--	0.05U	0.05U	0.05U	0.052U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U		
HEPTACHLOR EPOXIDE	1024-57-3	ug/L	0.2	0.47	0.0094	0.04	--	0.05U	0.05U	0.05U	0.052U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U	0.051U		
METHOXYCHLOR	72-43-5	ug/L	40	180	NE	40	--	0.5U	0.5U	0.5U	0.52U	0.51U	0.51U	0.51U	0.51U	0.51U	0.51U	0.51U		
TOXAPHENE	8001-35-2	ug/L	3	NE	0.077	0.3	--	5U	5U	5U	5.2U	5.1U	5.1U	5.1U	5.1U	5.1U	5.1U	5.1U		

Notes:

NE None Established

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.

ug/L microgram(s) per liter

CRSC Cancer Risk Screening Concentration

EPA United States Environmental Protection Agency

MCL Maximum Contaminant Level

MCLG Maximum Contaminant Level Goal

RDSC Reference Dose Screening Concentration

SCDM Superfund Chemical Data Matrix

Table E5

Source Ground Water PCBs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS NO.	Units	SCDM/MCL/MCLG	SCDM/RDSC	SCDM/CRSC	Montana Human Health	Location Sample ID	Background Wells		On-Site Wells							
								Date	Type	MW-01 CF-GW-MW-01 9/26/2013	MW-01 CF-GW-MW-18 9/26/2013	MW-02 CF-GW-MW-02 9/26/2013	MW-03 CF-GW-MW-03 9/26/2013	MW-04 CF-GW-MW-04 9/26/2013	MW-05 CF-GW-MW-05 9/26/2013	MW-05 CF-GW-MW-16 9/26/2013	MW-06 CF-GW-MW-06 9/26/2013
PCBs																	
Aroclor-1016	12674-11-2	ug/L	NE	NE	NE	NE	--			1UJ	1UJ	1U	1UJ	1U	1U	1U	1UJ
Aroclor-1221	11104-28-2	ug/L	NE	NE	NE	NE	--			1UJ	1UJ	1U	1UJ	1U	1U	1U	1UJ
Aroclor-1232	11141-16-5	ug/L	NE	NE	NE	NE	--			1UJ	1UJ	1U	1UJ	1U	1U	1U	1UJ
Aroclor-1242	53469-21-9	ug/L	NE	NE	NE	NE	--			1UJ	1UJ	1U	1UJ	1U	1U	1U	1UJ
Aroclor-1248	12672-29-6	ug/L	NE	NE	NE	NE	--			1UJ	1UJ	1U	1UJ	1U	1U	1U	1UJ
Aroclor-1254	11097-69-1	ug/L	NE	NE	NE	NE	--			1UJ	1UJ	1U	1UJ	1U	1U	1U	1UJ
Aroclor-1260	11096-82-5	ug/L	NE	NE	NE	NE	--			1UJ	1UJ	1U	1UJ	1U	1U	1U	1UJ
Aroclor-1262	37324-23-5	ug/L	NE	NE	NE	NE	--			1UJ	1UJ	1U	1UJ	1U	1U	1U	1UJ
Aroclor-1268	11100-14-4	ug/L	NE	NE	NE	NE	--			1UJ	1UJ	1U	1UJ	1U	1U	1U	1UJ

Notes:

NE None Established

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.

UJ The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

ug/L microgram(s) per liter

CRSC Cancer Risk Screening Concentration

EPA United States Environmental Protection Agency

MCL Maximum Contaminant Level

MCLG Maximum Contaminant Level Goal

RDSC Reference Dose Screening Concentration

SCDM Superfund Chemical Data Matrix

Table E6

Source Ground Water TAL Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	SCDM	SCDM RDSC	SCDM CRSC	Montana Human Health	Location Sample ID	Background Wells		Three Times Background Concentration	On-Site Wells							
								MW-01 CF-GW-MW-01 9/26/2013 Field Sample	MW-01 CF-GW-MW-18 9/26/2013 Field Duplicate		MW-02 CF-GW-MW-02 9/25/2013 Field Sample	MW-03* CF-GW-MW-03 9/30/2013 Field Sample	MW-04 CF-GW-MW-04 9/25/2013 Field Sample	MW-05 CF-GW-MW-05 9/25/2013 Field Sample	MW-05 CF-GW-MW-16 9/25/2013 Field Duplicate	MW-06 CF-GW-MW-06 9/26/2013 Field Sample	MW-07 CF-GW-MW-07 9/26/2013 Field Sample	
Metals																		
Aluminum	7429-90-5	ug/L	NE	NE	NE	NE	--	5900J- (7670)	743J- (965.9)	23010	26.1J	6470J	20UJ	20UJ	20UJ	20U	843J-	
Antimony	7440-36-0	ug/L	6	15	NE	6	--	2U	2U	--	2UJ	4UJ	2UJ	2UJ	2UJ	2UJ	2U	
Arsenic	7440-38-2	ug/L	10	11	0.057	10	--	8.4J- (11.34)	1.7J- (2.295)	340.2	1UJ	316J	2.2J	1UJ	1UJ	1U	3.9J-	
Barium	7440-39-3	ug/L	2000	2600	NE	1000	--	110J- (137.5)	80.1J- (100.125)	412.5	68.5J	296J-	132J	113J	108J	203	228J-	
Beryllium	7440-41-7	ug/L	4	73	NE	4	--	1U	1U	--	1UJ	1UJ	1UJ	1UJ	1UJ	1U	1U	
Cadmium	7440-43-9	ug/L	5	18	NE	5	--	1U	1U	--	1UJ	2U	1UJ	1UJ	1UJ	1U	1U	
Calcium	7440-70-2	ug/L	NE	NE	NE	NE	--	46500J- (57660)	58100J- (72044)	216132	5650J	18200J	26900J	58100J	57700J	82100J	66200J-	
Chromium	7440-47-3	ug/L	100	110	NE	100	--	4.7J- (6.11)	2U	18.33	2UJ	156J	2UJ	2UJ	2UJ	2U	2U	
Cobalt	7440-48-4	ug/L	NE	NE	NE	NE	--	2.2J- (10.40)	1U	31.2	1UJ	346J	4.7J	5.2J	5J	4.5	1U	
Copper	7440-50-8	ug/L	1300	NE	NE	1300	--	9.5J- (11.875)	2U	36.63	25.2J	308J	2.8J	2UJ	2UJ	2U	3.6J-	
Cyanide	57-12-5	ug/L	200	730	NE	200	--	5.7J- (7.752)	13.8J- (18.77)	56.31	10UJ	769J-	1040J-	900J-	990J-	835J-	7.2J-	
Iron	7439-89-6	ug/L	NE	NE	NE	NE	--	6260J- (7938)	913J- (1160)	23814	16800J	37900J	556J	1550J	1240J	968	2210J-	
Lead	7439-92-1	ug/L	15	NE	NE	15	--	7J- (9.17)	1U	27.51	59.3J	22.6J-	1UJ	1UJ	1UJ	1U	7.8J-	
Magnesium	7439-95-4	ug/L	NE	NE	NE	NE	--	14900J- (18476)	14400J- (17856)	55428	7810J	34100J	9790J	17000J	16700J	23200	18100J-	
Manganese	7439-96-5	ug/L	NE	5100	NE	NE	--	129J- (165.12)	22.4J- (28.672)	495.36	83.4J	168J	4J	92.2J	68J	5.1	37.6J-	
Mercury	7439-97-6	ug/L	2	11	NE	2	--	0.2U	0.2U	--	0.011U	0.77J-	0.014U	0.2U	0.011U	0.2U	0.2U	
Nickel	7440-02-0	ug/L	NE	730	NE	100	--	6J- (7.74)	1.5U	23.22	2.1UJ	155J	1UJ	1.2UJ	1.2UJ	1.4	2.2J-	
Potassium	7440-09-7	ug/L	NE	NE	NE	NE	--	1390J- (1724)	692J- (789)	5172	1180	23400J	1020	1730	1720	1050	810J-	
Selenium	7782-49-2	ug/L	50	180	NE	50	--	5U	5U	--	5U	94.2J	1.4J	0.76J	0.9J	5U	5U	
Silver	7440-22-4	ug/L	NE	180	NE	100	--	1U	1U	--	1U	2U	1U	1U	1U	1U	1U	
Sodium	7440-23-5	ug/L	NE	NE	NE	NE	--	3950U	4020J- (5065)	15195	113000	4840000J-	99700	99600	109000	59600	3980U	
Thallium	7440-28-0	ug/L	0.5	NE	NE	2	--	1U	1U	--	1U	2U	1U	1U	1U	1U	1U	
Vanadium	7440-62-2	ug/L	NE	260	NE	NE	--	4.1U	0.64U	--	5UJ	2480J	5UJ	5UJ	5UJ	5U	5U	
Zinc	7440-66-6	ug/L	NE	11000	NE	2000	--	58.7J- (75.72)	3.9U	227.16	2000J	1590J	3.9J	77.1J	62.9J	5.2U	14.6J-	

Notes:

- Bold** The analyte was detected above the method detection limit
- Bold** The analyte concentration exceeds 3X background and is significant to the Site
- * Results are biased low (except cyanide) due to inability to properly preserve sample in the field
- J The associated value is an estimated quantity
- Result is biased low
- NE None Established
- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- ug/L microgram(s) per liter
- CRSC Cancer Risk Screening Concentration
- EPA United States Environmental Protection Agency
- MCL Maximum Contaminant Level
- MCLG Maximum Contaminant Level Goal
- RDSC Reference Dose Screening Concentration
- SCDM Superfund Chemical Data Matrix

Table E7

Source Ground Water Dissolved Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	SCDM MCL/MCLG	SCDM RDSC	SCDM CRSC	Montana Human Health	Location Sample ID	Background Wells		Three Times Background Concentration	On-Site Wells						
								MW-01 CF-GW-MW-01	MW-01 CF-GW-MW-18		MW-02 CF-GW-MW-02	MW-03* CF-GW-MW-03	MW-04 CF-GW-MW-04	MW-05 CF-GW-MW-05	MW-05 CF-GW-MW-16	MW-06 CF-GW-MW-06	MW-07 CF-GW-MW-07
Date Type	9/26/2013 Field Sample	9/26/2013 Field Duplicate	9/25/2013 Field Sample	9/30/2013 Field Sample	9/25/2013 Field Sample	9/26/2013 Field Sample	9/26/2013 Field Sample	9/26/2013 Field Sample	9/26/2013 Field Sample								
Metals, Dissolved																	
Aluminum	7429-90-5	ug/L	NE	NE	NE	NE	--	8.4J (10.85)	20U	32.55	20U	74.6J	20U	20U	20U	20U	
Antimony	7440-36-0	ug/L	6	15	NE	6	--	2U	2U	--	2U	4U	2U	2U	2U	2U	
Arsenic	7440-38-2	ug/L	10	11	0.057	10	--	1U	1U	--	1U	344	2.3	1U	1U	1U	
Barium	7440-39-3	ug/L	2000	2600	NE	1000	--	68.9	70.2	210.6	56.5	111	128	98.9	98.1	197	
Beryllium	7440-41-7	ug/L	4	73	NE	4	--	1U	1U	--	1U	1UJ	1U	1U	1U	1U	
Cadmium	7440-43-9	ug/L	5	18	NE	5	--	1U	1U	--	1U	2U	1U	1U	1U	1U	
Calcium	7440-70-2	ug/L	NE	NE	NE	NE	--	56000	58200	174600	5760	5980J	28800	58800	58000	79900	
Chromium	7440-47-3	ug/L	100	110	NE	100	--	2U	2U	--	2U	10.3	2U	2U	2U	2U	
Cobalt	7440-48-4	ug/L	NE	NE	NE	NE	--	1U	1U	--	1U	344	4.8	4.6	4.4	4.5	
Copper	7440-50-8	ug/L	1300	NE	NE	1300	--	2U	2U	--	2U	260	3.5	2U	2U	2U	
Iron	7439-89-6	ug/L	NE	NE	NE	NE	--	301	261	903	200U	24000	527	605	631	669	
Lead	7439-92-1	ug/L	15	NE	NE	15	--	1U	1U	--	3.1	2U	1U	1U	1U	1U	
Magnesium	7439-95-4	ug/L	NE	NE	NE	NE	--	13000	13300	39900	8000	28200J	10800	18200	18000	22600	
Manganese	7439-96-5	ug/L	NE	5100	NE	NE	--	10.9	11	33	6.4	26.3	4.1	7.2	5.1	1U	
Mercury	7439-97-6	ug/L	2	11	NE	2	--	0.2U	0.2U	--	0.2U	0.3	0.2U	0.2U	0.2U	0.2U	
Nickel	7440-02-0	ug/L	NE	730	NE	100	--	0.87J (1.122)	1U	3.366	0.27J	62.8	1U	1.1	1.1	1.4	
Potassium	7440-09-7	ug/L	NE	NE	NE	NE	--	522	530	1590	1190	23100J	1060	1690	1660	1050	
Selenium	7782-49-2	ug/L	50	180	NE	50	--	5U	5U	--	5U	96.4	1.4J	5U	0.68J	5U	
Silver	7440-22-4	ug/L	NE	180	NE	100	--	1U	1U	--	1U	2U	1U	1U	1U	1U	
Sodium	7440-23-5	ug/L	NE	NE	NE	NE	--	3770J	3840	11520	110000J	5200000J	113000	104000	102000	59800	
Thallium	7440-28-0	ug/L	0.5	NE	NE	2	--	1U	1U	--	1U	2U	1U	1U	1U	1U	
Vanadium	7440-62-2	ug/L	NE	260	NE	NE	--	5U	5U	--	5U	3060	5U	5U	5U	5U	
Zinc	7440-66-6	ug/L	NE	11000	NE	2000	--	2U	2UJ	--	76.2	10.2	4.3UJ	33.3J	32.1J	5.7J	

Notes:

- Bold** The analyte was detected above the method detection limit
- Bold** The analyte concentration exceeds 3X background and is significant to the Site
- * Results are biased low due to inability to properly preserve sample in the field
- J The associated value is an estimated quantity.
- NE None Established
- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- ug/L microgram(s) per liter
- CRSC Cancer Risk Screening Concentration
- EPA United States Environmental Protection Agency
- MCL Maximum Contaminant Level
- MCLG Maximum Contaminant Level Goal
- RDSC Reference Dose Screening Concentration
- SCDM Superfund Chemical Data Matrix

Source Ground Water General Chemistry Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E8

Analyte	CAS.NO	Units	SCDM	SCDM	SCDM	CRSC	Montana Human Health	Location Sample ID	Background Wells		Three Times Background Concentration	On-Site Wells						
									MW-01 CF-GW-MW-01	MW-01 CF-GW-MW-18		MW-02 CF-GW-MW-02	MW-03 CF-GW-MW-03	MW-04 CF-GW-MW-04	MW-05 CF-GW-MW-05	MW-05 CF-GW-MW-16	MW-06 CF-GW-MW-06	MW-07 CF-GW-MW-07
GENCHEM																		
Fluoride	16984-48-8	ug/L	NE	NE	NE	4000	--	100 J	100 J	300	700	190000	3800	2800	2700	1600	400	
Nitrate/Nitrite as N	NA	ug/L	NE	NE	NE	10000	--	500 U	500 U	--	700	193000	10800	6600	6600	5400	200J	

Notes:

- Bold** The analyte was detected above the method detection limit
- Bold** The analyte concentration exceeds 3X background and is significant to the Site
- J The associated value is an estimated quantity.
- NE None Established
- ug/L microgram(s) per liter
- CRSC Cancer Risk Screening Concentration
- EPA United States Environmental Protection Agency
- MCL Maximum Contaminant Level
- MCLG Maximum Contaminant Level Goal
- RDSC Reference Dose Screening Concentration
- SCDM Superfund Chemical Data Matrix

Table E9

Source Surface Water VOCs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS#	Units	SCDM: Acute	SCDM: Chronic	Montana Aquatic Life Acute	Montana Aquatic Life Chronic	Location Sample ID Date	North Percolation Ponds			South Percolation Pond		
								SW-19 CF-SW-19 9/30/2013 Field	SW-25 CF-SW-25 9/30/2013 Field	SW-20 CF-SW-20 9/30/2013 Field	SW-21 CF-SW-21 10/1/2013 Field	SW-22 CF-SW-22 10/1/2013 Field	
VOCs													
1,1,1-Trichloroethane	71-55-6	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,1,2,2-Tetrachloroethane	79-34-5	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,1,2-Trichloroethane	79-00-5	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,1-Dichloroethane	75-34-3	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,1-Dichloroethylene	75-35-4	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,2,3-Trichlorobenzene	87-61-6	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,2,4-Trichlorobenzene	120-82-1	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,2-Dibromo-3-chloropropane	96-12-8	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,2-Dibromoethane	106-93-4	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,2-Dichlorobenzene	95-50-1	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,2-Dichloroethane	107-06-2	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,2-Dichloropropane	78-87-5	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,3-Dichlorobenzene	541-73-1	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
1,4-Dichlorobenzene	106-46-7	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
2-Butanone	78-93-3	ug/L	NE	NE	NE	NE	--	5U	5U	5U	5U	5U	
2-Hexanone	591-78-6	ug/L	NE	NE	NE	NE	--	5U	5U	5U	5U	5U	
4-Methyl-2-pentanone	108-10-1	ug/L	NE	NE	NE	NE	--	5U	5U	5U	5U	5U	
Acetone	67-64-1	ug/L	NE	NE	NE	NE	--	5U	5U	5U	5U	5U	
Benzene	71-43-2	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Bromochloromethane	74-97-5	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Bromodichloromethane	75-27-4	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Bromoform	75-25-2	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Bromomethane	74-83-9	ug/L	NE	NE	NE	NE	--	0.5R	0.5R	0.5R	0.5R	0.5R	
Carbon disulfide	75-15-0	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Carbon tetrachloride	56-23-5	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Chlorobenzene	108-90-7	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Chloroethane	75-00-3	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Chloroform	67-66-3	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Chloromethane	74-87-3	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
cis-1,2-Dichloroethene	156-59-2	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
cis-1,3-Dichloropropene	10061-01-5	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Cyclohexane	110-82-7	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Dibromochloromethane	124-48-1	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Dichlorodifluoromethane	75-71-8	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Ethylbenzene	100-41-4	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Isopropylbenzene	98-82-8	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
m,p-Xylene	179601-23-1	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Methyl acetate	79-20-9	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Methyl tert-butyl ether	1634-04-4	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Methylcyclohexane	108-87-2	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Methylene chloride	75-09-2	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
p-Xylene	95-47-6	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Styrene	106-42-5	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Tetrachloroethene	127-18-4	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Toluene	108-88-3	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
trans-1,2-Dichloroethene	156-60-5	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
trans-1,3-Dichloropropene	10061-02-6	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Trichloroethene	79-01-6	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Trichlorofluoromethane	75-69-4	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	
Vinyl chloride	75-01-4	ug/L	NE	NE	NE	NE	--	0.5U	0.5U	0.5U	0.5U	0.5U	

Notes:

Bold	The analyte was detected above the method detection limit.
NE	None Established
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
ug/L	microgram(s) per liter
CRSC	Cancer Risk Screening Concentration
EPA	United States Environmental Protection Agency
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
RDSC	Reference Dose Screening Concentration
SCDM	Superfund Chemical Data Matrix

Table E10

Source Surface Water SVOCs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO.	Units	SCDM Acute	SCDM Chronic	Montana Aquatic Life Acute	Montana Aquatic Life Chronic	Location Sample ID	Date Type	North Percolation Ponds			South Percolation Ponds		
									SW-13 CF-SW-19 9/30/2013 Field Sample	SW-19 CF-SW-25 9/30/2013 Field Duplicate	SW-20 CF-SW-20 9/30/2013 Field Sample	SW-21 CF-SW-21 10/1/2013 Field Sample	SW-22 CF-SW-22 10/1/2013 Field Sample	
SVOCs														
1,1'-Biphenyl	92-52-4	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2,2'-Oxybis(1-chloropropane)	108-60-1	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2,3,4,6-Tetrachlorophenol	58-90-2	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2,4,5-Trichlorophenol	95-95-4	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2,4,6-Trichlorophenol	88-06-2	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2,4-Dichlorophenol	120-83-2	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2,4-Dimethylphenol	105-67-9	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2,4-Dinitrophenol	51-28-5	ug/L	NE	NE	NE	NE	--	--	10U	10U	10U	10U	10U	
2,4-Dinitrotoluene	121-14-2	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2,6-Dinitrotoluene	606-20-2	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2-Chloronaphthalene	91-58-7	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2-Chlorophenol	95-57-8	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2-Methylnaphthalene	91-57-6	ug/L	NE	NE	NE	NE	--	--	5R	5R	5R	5R	5R	
2-Methylphenol	95-48-7	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
2-Nitroaniline	88-74-4	ug/L	NE	NE	NE	NE	--	--	10U	10U	10U	10U	10U	
2-Nitrophenol	88-75-5	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
3,3'-Dichlorobenzidine	91-94-1	ug/L	NE	NE	NE	NE	--	--	5R	5R	5R	5R	5U	
3-Nitroaniline	99-09-2	ug/L	NE	NE	NE	NE	--	--	10U	10U	10U	10U	10U	
4,6-Dinitro-2-methylphenol	534-52-1	ug/L	NE	NE	NE	NE	--	--	10U	10U	10U	10U	10U	
4-Bromophenyl-phenylether	101-55-3	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
4-Chloro-3-methylphenol	59-50-7	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
4-Chloroaniline	106-47-8	ug/L	NE	NE	NE	NE	--	--	5R	5R	5R	5R	5U	
4-Chlorophenyl-phenylether	7005-72-3	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
4-Methylphenol	106-44-5	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
4-Nitroaniline	100-01-6	ug/L	NE	NE	NE	NE	--	--	10U	10U	10U	10U	10U	
4-Nitrophenol	100-02-7	ug/L	NE	NE	NE	NE	--	--	10U	10U	10U	10U	10U	
Acenaphthene	83-32-9	ug/L	NE	NE	NE	NE	--	--	5R	5R	5R	5R	5R	
Acenaphthylene	208-96-8	ug/L	NE	NE	NE	NE	--	--	5R	5R	5R	5R	5R	
Acetophenone	98-86-2	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Anthracene	120-12-7	ug/L	NE	NE	NE	NE	--	--	2.8R	5R	5R	5R	5R	
Atrazine	1912-24-9	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Benzaldehyde	100-52-7	ug/L	NE	NE	NE	NE	--	--	5UJ	5UJ	5UJ	5UJ	5UJ	
Benz(a)anthracene	56-55-3	ug/L	NE	NE	NE	NE	--	--	7R	5R	5R	5R	5R	
Benz(a)pyrene	50-32-8	ug/L	NE	NE	NE	NE	--	--	4.4R	5R	5R	5R	5R	
Benz(b)fluoranthene	205-99-2	ug/L	NE	NE	NE	NE	--	--	8.8R	5R	2.2R	3.3R	5R	
Benz(g,h)perylene	191-24-2	ug/L	NE	NE	NE	NE	--	--	2.3R	5R	5R	5R	5R	
Benz(k)fluoranthene	207-08-9	ug/L	NE	NE	NE	NE	--	--	2.9R	5R	5R	5R	5R	
Bis(2-chloroethoxy)methane	111-91-1	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Bis(2-chloroethyl)ether	111-44-4	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Bis(2-ethylhexyl)phthalate	117-81-7	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Butylbenzylphthalate	85-68-7	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Caprolactam	105-60-2	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Carbazole	86-74-8	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Chrysene	218-01-9	ug/L	NE	NE	NE	NE	--	--	13	3R	5R	6.5R	5R	
Dibenz(a,h)anthracene	53-70-3	ug/L	NE	NE	NE	NE	--	--	5R	5R	5R	5R	5R	
Dibenzofuran	132-64-9	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Diethylphthalate	84-66-2	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Dimethylphthalate	131-11-3	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	7.6	
Di-n-butylphthalate	84-74-2	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Di-n-octylphthalate	117-84-0	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Fluoranthene	206-44-0	ug/L	NE	NE	NE	NE	--	--	32	9.5	5R	2.6R	5R	
Fluorene	86-73-7	ug/L	NE	NE	NE	NE	--	--	5R	5R	5R	5R	5R	
Hexachlorobenzene	118-74-1	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Hexachlorobutadiene	87-68-3	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Hexachlorocyclopentadiene	77-47-4	ug/L	NE	NE	NE	NE	--	--	5R	5R	5R	5R	5U	
Hexachloroethane	67-72-1	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Indeno(1,2,3-cc)pyrene	193-39-5	ug/L	NE	NE	NE	NE	--	--	2.6R	5R	5R	5R	5R	
Isophorone	78-59-1	ug/L	NE	NE	NE	NE	--	--	5UJ	5UJ	5UJ	5UJ	5UJ	
Naphthalene	91-20-3	ug/L	NE	NE	NE	NE	--	--	5R	5R	5R	5R	5R	
Nitrobenzene	98-95-3	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
N-Nitroso-di-n-propylamine	621-64-7	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
N-Nitrosodiphenylamine	86-30-6	ug/L	NE	NE	NE	NE	--	--	5U	5U	5U	5U	5U	
Pentachlorophenol	87-86-5	ug/L	19	15	5.3	4	--	--	10U	10U	10U	10U	10U	
Phenanthrene	85-01-8	ug/L	NE	NE	NE	NE	--	--	5.1R	5R	5R	5R	5R	
Phenol	108-95-2	ug/L	NE	NE	NE	NE	--	--	5UJ	5UJ	5UJ	5UJ	5UJ	
Pyrene	129-00-0	ug/L	NE	NE	NE	NE	--	--	32	9.4	5R	2.4R	5R	

Notes:

- Bold** The analyte was detected above the method detection limit
- J** The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- NE** None Established
- R** The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U** The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
- UJ** The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- ug/L** microgram(s) per liter
- SCDM** Superfund Chemical Data Matrix

Source Surface Water PAHs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E11

Analyte	CAS.NO	Units	SCDM Acute	SCDM Chronic	Montana Aquatic Life Acute	Montana Aquatic Life Chronic	Location Sample ID Date Type	North Percolation Ponds			South Percolation Ponds	
								SW-19 CF-SW-19 9/30/2013 Field Sample	SW-19 CF-SW-25 9/30/2013 Field Duplicate	SW-20 CF-SW-20 9/30/2013 Field Sample	SW-21 CF-SW-21 10/1/2013 Field Sample	SW-22 CF-SW-22 10/1/2013 Field Sample
SVOC SIM												
2-Methylnaphthalene	91-57-6	ug/L	NE	NE	NE	NE	--	1R	1R	0.5R	1R	0.053R
Acenaphthene	83-32-9	ug/L	NE	NE	NE	NE	--	1.3R	0.43R	0.5R	1R	0.1R
Acenaphthylene	208-96-8	ug/L	NE	NE	NE	NE	--	0.05J	1R	0.5R	1R	0.1R
Anthracene	120-12-7	ug/L	NE	NE	NE	NE	--	2.4R	1.1R	0.3R	1R	0.1R
Benzo(a)anthracene	56-55-3	ug/L	NE	NE	NE	NE	--	5.4R	1.3R	0.65R	1.2R	0.05J
Benzo(a)pyrene	50-32-8	ug/L	NE	NE	NE	NE	--	3.5R	0.95R	0.76R	0.55R	0.1R
Benzo(b)fluoranthene	205-99-2	ug/L	NE	NE	NE	NE	--	4.3R	1.1R	1R	1.8R	0.1R
Benzo(g,h,i)perylene	191-24-2	ug/L	NE	NE	NE	NE	--	1.5R	0.43R	0.58R	0.75R	0.1R
Benzo(k)fluoranthene	207-08-9	ug/L	NE	NE	NE	NE	--	3.7R	1.2R	1.2R	1.1R	0.1R
Chrysene	218-01-9	ug/L	NE	NE	NE	NE	--	0.1R	2.4R	1.8R	5.6R	0.09J
Dibeno(a,h)anthracene	53-70-3	ug/L	NE	NE	NE	NE	--	0.76R	0.1J	0.5R	1R	0.1R
Fluoranthene	206-44-0	ug/L	NE	NE	NE	NE	--	0.1R	0.1R	1.2R	2.4R	0.08J
Fluorene	86-73-7	ug/L	NE	NE	NE	NE	--	1.4R	1R	0.057J	1R	0.1R
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	NE	NE	NE	NE	--	1.4R	1R	0.49R	0.68R	0.1R
Naphthalene	91-20-3	ug/L	NE	NE	NE	NE	--	0.86R	0.44R	0.5R	0.68R	0.4R
Pentachlorophenol	87-86-5	ug/L	19	15	5.3	4	--	0.2R	0.2R	0.2R	0.2R	0.2R
Phenanthrene	85-01-8	ug/L	NE	NE	NE	NE	--	3.8R	1.6R	0.28R	1R	0.06R
Pyrene	129-00-0	ug/L	NE	NE	NE	NE	--	0.1R	0.1R	1.5R	2.2R	0.09J

Notes:

Bold

The analyte was detected above the method detection limit

J

The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

R

The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

U

The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.

ug/L

microgram(s) per liter

SCDM

Superfund Chemical Data Matrix

Source Surface Water Pesticides Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E12

Analyte	CAS.NO	Units	SCDM Acute	SCDM Chronic	Montana Aquatic Life Acute	Montana Aquatic Life Chronic	Location Sample ID Date Type	North Percolation Ponds			South Percolation Ponds	
								SW-19 CF-SW-19 9/30/2013 Field Sample	SW-19 CF-SW-25 9/30/2013 Field Duplicate	SW-20 CF-SW-20 9/30/2013 Field Sample	SW-21 CF-SW-21 10/1/2013 Field Sample	SW-22 CF-SW-22 10/1/2013 Field Sample
Pesticides												
4,4'-DDD	72-54-8	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U
4,4'-DDE	72-55-9	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U
4,4'-DDT	50-29-3	ug/L	1.1	0.001	1.1	0.001	--	0.1U	0.1U	0.1U	0.1U	0.1U
ALDRIN	309-00-2	ug/L	3	NE	1.5	NE	--	0.05U	0.05U	0.05U	0.05U	0.05U
ALPHA-BHC	319-84-6	ug/L	NE	NE	NE	NE	--	0.05U	0.05U	0.05U	0.05U	0.05U
ALPHA-CHLORDANE	5103-71-9	ug/L	NE	NE	NE	NE	--	0.05U	0.05U	0.05U	0.05U	0.05U
BETA-BHC	319-85-7	ug/L	NE	NE	NE	NE	--	0.05U	0.05U	0.05U	0.05U	0.05U
DELTA-BHC	319-86-8	ug/L	NE	NE	NE	NE	--	0.05U	0.05U	0.05U	0.05U	0.05U
DIELDRIN	60-57-1	ug/L	0.24	0.056	0.24	0.056	--	0.1U	0.1U	0.1U	0.1U	0.1U
ENDOSULFAN I	959-98-8	ug/L	0.22	0.056	0.22	0.056	--	0.05U	0.05U	0.05U	0.05U	0.05U
ENDOSULFAN II	33213-65-9	ug/L	0.22	0.056	0.22	0.056	--	0.1U	0.1U	0.1U	0.1U	0.1U
ENDOSULFAN SULFATE	1031-07-8	ug/L	NE	NE	0.22	0.056	--	0.1U	0.1U	0.1U	0.1U	0.1U
ENDRIN	72-20-8	ug/L	0.086	0.036	0.086	0.0036	--	0.1U	0.1U	0.1U	0.1U	0.1U
ENDRIN ALDEHYDE	7421-93-4	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U
ENDRIN KETONE	53494-70-5	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U
GAMMA-BHC (LINDANE)	58-89-9	ug/L	NE	NE	0.95	NE	--	0.05U	0.05U	0.05U	0.05U	0.05U
GAMMA-CHLORDANE	5103-74-2	ug/L	NE	NE	NE	NE	--	0.05U	0.05U	0.05U	0.05U	0.05U
HEPTACHLOR	76-44-8	ug/L	0.52	0.0038	0.52	0.0038	--	0.05U	0.05U	0.05U	0.05U	0.05U
HEPTACHLOR EPOXIDE	1024-57-3	ug/L	0.52	0.0038	0.26	0.0038	--	0.05U	0.05U	0.05U	0.05U	0.05U
METHOXYCHLOR	72-43-5	ug/L	NE	0.03	NE	0.03	--	0.5U	0.5U	0.5U	0.5U	0.5U
TOXAPHENE	8001-35-2	ug/L	0.73	0.0002	0.73	0.0002	--	5U	5U	5U	5U	5U

Notes:

NE

None Established

U

The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.

ug/L

microgram(s) per liter

SCDM

Superfund Chemical Data Matrix

Source Surface Water PCBs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E13

Analyte	CAS.NO	Units	SCDM Acute	SCDM Chronic	Montana Aquatic Life Acute	Montana Aquatic Life Chronic	Location Sample ID Date Type	North Percolation Ponds			South Percolation Ponds	
								SW-19 CF-SW-19 9/30/2013 Field Sample	SW-19 CF-SW-25 9/30/2013 Field Duplicate	SW-20 CF-SW-20 9/30/2013 Field Sample	SW-21 CF-SW-21 10/1/2013 Field Sample	SW-22 CF-SW-22 10/1/2013 Field Sample
PCBs												
Aroclor-1016	12674-11-2	ug/L	NE	NE	NE	0.014	--	1UJ	1UJ	1UJ	1UJ	1UJ
Aroclor-1221	11104-28-2	ug/L	NE	NE	NE	0.014	--	1UJ	1UJ	1UJ	1UJ	1UJ
Aroclor-1232	11141-16-5	ug/L	NE	NE	NE	0.014	--	1UJ	1UJ	1UJ	1UJ	1UJ
Aroclor-1242	53469-21-9	ug/L	NE	NE	NE	0.014	--	1UJ	1UJ	1UJ	1UJ	1UJ
Aroclor-1248	12672-29-6	ug/L	NE	NE	NE	0.014	--	1UJ	1UJ	1UJ	1UJ	1UJ
Aroclor-1254	11097-69-1	ug/L	NE	NE	NE	0.014	--	1UJ	1UJ	1UJ	1UJ	1UJ
Aroclor-1260	11096-82-5	ug/L	NE	NE	NE	0.014	--	1UJ	1UJ	1UJ	1UJ	1UJ
Aroclor-1262	37324-23-5	ug/L	NE	NE	NE	NE	--	1UJ	1UJ	1UJ	1UJ	1UJ
Aroclor-1268	11100-14-4	ug/L	NE	NE	NE	NE	--	1UJ	1UJ	1UJ	1UJ	1UJ

Notes:

NE None Established

UJ The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

ug/L microgram(s) per liter

SCDM Superfund Chemical Data Matrix

Source Surface Water TAL Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E14

Analyte	CAS.NO	Units	SCDM Acute	SCDM Chronic	Montana Aquatic Life Acute	Montana Aquatic Life Chronic	Location Sample ID Date Type	North Percolation Ponds			South Percolation Ponds	
								SW-19 CF-SW-19 9/30/2013 Field Sample	SW-19 CF-SW-25 9/30/2013 Field Duplicate	SW-20 CF-SW-20 9/30/2013 Field Sample	SW-21 CF-SW-21 10/1/2013 Field Sample	SW-22 CF-SW-22 10/1/2013 Field Sample
Metals												
Aluminum	7429-90-5	ug/L	750	87	750	87	--	4650J-	2160J-	1180J-	857J-	8800J-
Antimony	7440-36-0	ug/L	NE	NE	NE	NE	--	2U	2U	2U	2U	2U
Arsenic	7440-38-2	ug/L	340	150	340	150	--	1J-	1U	1U	1U	1.6J-
Barium	7440-39-3	ug/L	NE	NE	NE	NE	--	50.6J-	34.3J-	49.2J-	161J-	812J-
Beryllium	7440-41-7	ug/L	NE	NE	NE	NE	--	1U	1U	1U	1U	1U
Cadmium	7440-43-9	ug/L	2	0.25	0.52	0.097	--	1U	1U	1U	1U	1U
Calcium	7440-70-2	ug/L	NE	NE	NE	NE	--	11100J	7900J	12600J	33500J	157000J
Chromium	7440-47-3	ug/L	NE	NE	NE	NE	--	2U	2U	2U	2U	8.4J-
Cobalt	7440-48-4	ug/L	NE	NE	NE	NE	--	1U	1U	1U	1U	4.5J-
Copper	7440-50-8	ug/L	13	9	3.79	2.85	--	2.8J-	2U	2U	9.7J-	32.4J-
Cyanide	57-12-5	ug/L	22	5.2	22	5.2	--	133J-	72.6J-	4.9J	70.8	24.8
Iron	7439-89-6	ug/L	NE	1000	NE	1000	--	219J-	200U	200U	350J-	8680J-
Lead	7439-92-1	ug/L	65	2.5	13.98	0.545	--	4.7J-	1U	1U	3J-	8.6J-
Magnesium	7439-95-4	ug/L	NE	NE	NE	NE	--	2360J-	1840J-	2380J-	9720J-	23400J-
Manganese	7439-96-5	ug/L	NE	NE	NE	NE	--	9J-	8.3J-	6.8J-	2.3J-	92.1J-
Mercury	7439-97-6	ug/L	1.4	0.77	1.7	0.91	--	0.2U	0.2U	0.2U	0.2U	0.2U
Nickel	7440-02-0	ug/L	470	52	145	16.1	--	23.4J-	11.6J-	9J-	2.7J-	14.6J-
Potassium	7440-09-7	ug/L	NE	NE	NE	NE	--	500U	500U	500U	551J-	2920J-
Selenium	7782-49-2	ug/L	NE	5	20	5	--	5U	5U	5U	5U	5U
Silver	7440-22-4	ug/L	3.2	NE	0.374	NE	--	1U	1U	1U	1U	1U
Sodium	7440-23-5	ug/L	NE	NE	NE	NE	--	4510J-	3770J-	3780J-	3120J-	6960J-
Thallium	7440-28-0	ug/L	NE	NE	NE	NE	--	1U	1U	1U	1U	1U
Vanadium	7440-62-2	ug/L	NE	NE	NE	NE	--	7.7J-	5U	5.3J-	5U	10.4J-
Zinc	7440-66-6	ug/L	120	120	37	37	--	62.1J-	60.7J-	32.1J-	39J-	49.3J-

Notes:

- Bold** The analyte was detected above the method detection limit
- J** The associated value is an estimated quantity.
- Result is biased low
- NE** None Established
- U** The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- UJ** The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
- ug/L** microgram(s) per liter
- SCDM** Superfund Chemical Data Matrix

Source Surface Water Dissolved Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E15

Analyte	CAS.NO	Units	SCDM Acute	SCDM Chronic	Montana Aquatic Life Acute	Montana Aquatic Life Chronic	Location Sample ID Date Type	North Percolation Ponds			South Percolation Ponds	
								SW-19 CF-SW-19 9/30/2013 Field Sample	SW-19 CF-SW-25 9/30/2013 Field Duplicate	SW-20 CF-SW-20 9/30/2013 Field Sample	SW-21 CF-SW-21 10/1/2013 Field Sample	SW-22 CF-SW-22 10/1/2013 Field Sample
Metals, Dissolved												
Aluminum	7429-90-5	ug/L	750	87	750	87	--	1550	1530	243	63.2	9.3J
Antimony	7440-36-0	ug/L	NE	NE	NE	NE	--	2U	2U	2U	2U	2U
Arsenic	7440-38-2	ug/L	340	150	340	150	--	1U	1U	1U	1U	1U
Barium	7440-39-3	ug/L	NE	NE	NE	NE	--	40.8	41.6	44.9	154	120
Beryllium	7440-41-7	ug/L	NE	NE	NE	NE	--	1U	1U	1U	1U	1U
Cadmium	7440-43-9	ug/L	2	0.25	0.52	0.097	--	1U	1U	1U	1U	1U
Calcium	7440-70-2	ug/L	NE	NE	NE	NE	--	10100	10300	14400	35100	19100
Chromium	7440-47-3	ug/L	NE	NE	NE	NE	--	2U	2U	2U	2U	2U
Cobalt	7440-48-4	ug/L	NE	NE	NE	NE	--	1U	1U	1U	1U	1U
Copper	7440-50-8	ug/L	13	9	3.79	2.85	--	2U	2U	2U	3.5	2.8
Iron	7439-89-6	ug/L	NE	1000	NE	1000	--	200U	200U	200U	200U	200U
Lead	7439-92-1	ug/L	65	2.5	13.98	0.545	--	1U	1U	1U	1U	1U
Magnesium	7439-95-4	ug/L	NE	NE	NE	NE	--	2410	2470	2260	9580	13800
Manganese	7439-96-5	ug/L	NE	NE	NE	NE	--	9	8.5	6.2	2.1	1U
Mercury	7439-97-6	ug/L	1.4	0.77	1.7	0.91	--	0.2U	0.2U	0.2U	0.2U	0.2U
Nickel	7440-02-0	ug/L	470	52	145	16.1	--	10.2	10	6.9	1.1	1U
Potassium	7440-09-7	ug/L	NE	NE	NE	NE	--	500U	500U	500U	500U	1470
Selenium	7782-49-2	ug/L	NE	5	20	5	--	5U	5U	5U	5U	5U
Silver	7440-22-4	ug/L	3.2	NE	0.374	NE	--	1U	1U	1U	1U	1U
Sodium	7440-23-5	ug/L	NE	NE	NE	NE	--	3890J	3830J	3640J	3080J	6900J
Thallium	7440-28-0	ug/L	NE	NE	NE	NE	--	1U	1U	1U	1U	1U
Vanadium	7440-62-2	ug/L	NE	NE	NE	NE	--	5U	5U	5.5	5U	5U
Zinc	7440-66-6	ug/L	120	120	37	37	--	47.7	50.9	17.6	15.7	3.2

Notes:

- Bold** The analyte was detected above the method detection limit
- J The associated value is an estimated quantity.
- NE None Established
- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- ug/L microgram(s) per liter
- SCDM Superfund Chemical Data Matrix

Source Surface Water General Chemistry Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E16

Analyte	CAS.NO	Units	SCDM	SCDM	Montana Aquatic	Montana Aquatic	Location Sample ID	North Percolation Ponds			South Percolation Ponds		
			Acute	Chronic	Life Acute	Life Chronic		Date	SW-19	SW-19	SW-20	SW-21	SW-22
GENCHEM													
Fluoride	16984-48-8	ug/L	NE	NE	NE	NE	CF-SW-19	9/30/2013	8800	8900	8200	570	380
Nitrate/Nitrite as N	NA	ug/L	NE	NE	NE	NE	--	--	--	--	--	--	--

Notes:

- Bold** The analyte was detected above the method detection limit
- NE None Established
- ug/L microgram(s) per liter
- SCDM Superfund Chemical Data Matrix

Table E17

Source Sediment VOCs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS No.	Units	SCDM R05C	SCDM CR5C	Location Sample ID	Date	North Percolation Ponds					South Percolation Ponds	
							Type	SD-17 CF-SD-17	SD-18 CF-SD-18	SD-19 CF-SD-19	SD-20 CF-SD-20	SD-21 CF-SD-21	Date
VOCs													
1,1,1-Trichloroethane	71-55-6	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096UJ	
1,1,2,2-Tetrachloroethane	79-34-5	mg/kg	160	3.2	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
1,1,2,2-Trichloro-1,2,2-trifluoroethane	76-13-1	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096UJ	
1,1,2-Trichloroethane	79-00-5	mg/kg	310	11	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096UJ	
1,1-Dichloroethane	75-34-3	mg/kg	1.6	110	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
1,1-Dichloroethene	75-35-4	mg/kg	3900	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
1,2,3-Trichlorobenzene	87-61-6	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
1,2,4-Trichlorobenzene	120-82-1	mg/kg	780	22	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
1,2-Dibromo-3-chloropropane	96-12-8	mg/kg	16	0.19	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
1,2-Dibromoethane	106-93-4	mg/kg	700	0.32	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
1,2-Dichlorobenzene	95-50-1	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
1,2-Dichloroethane	107-06-2	mg/kg	470	7	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096UJ	
1,2-Dichloropropane	78-87-5	mg/kg	7000	18	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
1,3-Dichlorobenzene	541-73-1	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
1,4-Dichlorobenzene	106-46-7	mg/kg	NE	27	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
1,4-Dioxane	123-91-1	mg/kg	NE	NE	--	0/30/2013	0.24R	0.22R	0.61U	0.3U	0.32R	0.19UJ	
2-Butanone	78-93-3	mg/kg	47000	NE	--	0/30/2013	0.024R	0.022R	0.061U	0.03U	0.046R	0.0038U	
2-Hexanone	591-78-6	mg/kg	NE	NE	--	0/30/2013	0.024R	0.022R	0.061U	0.03U	0.046R	0.019U	
4-Methyl-2-pentanone	108-10-1	mg/kg	6300	NE	--	0/30/2013	0.024R	0.022R	0.061U	0.03U	0.046R	0.019U	
Acetone	67-64-1	mg/kg	70000	NE	--	0/30/2013	0.024R	0.022R	0.061U	0.03U	0.046R	0.019U	
Benzene	71-43-2	mg/kg	310	12	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Bromo-chloromethane	74-97-5	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Bromodichloromethane	75-27-4	mg/kg	1600	10	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Bromoform	75-25-2	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Bromomethane	74-83-9	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Carbon Disulfide	75-15-0	mg/kg	7800	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Carbon tetrachloride	56-23-5	mg/kg	310	9.1	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096UJ	
Chlorobenzene	108-90-7	mg/kg	1600	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Chloroethane	75-00-3	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Chloroform	67-66-3	mg/kg	780	21	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Chloro-methane	74-87-3	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
cis-1,2-Dichloroethene	156-59-2	mg/kg	160	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
cis-1,3-Dichloropropene	10061-01-5	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Cyclohexane	110-82-7	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Dibromo-chloromethane	124-48-1	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Dichlorodifluoromethane	75-71-8	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Ethylbenzene	100-41-4	mg/kg	7800	58	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Isopropylbenzene	98-82-8	mg/kg	7800	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
m,p-Xylene	179601-23-1	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Methyl acetate	79-20-9	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096UJ	
Methyl tert-butyl ether	1634-04-4	mg/kg	NE	360	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Methylcyclohexane	108-87-2	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Methylene chloride	75-09-2	mg/kg	470	75	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096UJ	
o-Xylene	95-47-6	mg/kg	160000	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Sterene	100-42-5	mg/kg	16000	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Tetrachloroethene	127-18-4	mg/kg	470	300	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Toluene	108-88-3	mg/kg	6300	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
trans-1,2-Dichloroethene	156-60-5	mg/kg	1600	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
trans-1,3-Dichloropropene	10061-02-6	mg/kg	NE	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Trichloroethene	79-01-6	mg/kg	NE	58	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	
Trichlorofluoromethane	75-69-4	mg/kg	23000	NE	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096UJ	
Vinyl chloride	75-01-4	mg/kg	230	0.43	--	0/30/2013	0.012R	0.011R	0.031U	0.015U	0.023R	0.0096U	

Notes:

- Bold** The analyte was detected above the method detection limit
- J** The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- NE** None Established
- R** The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U** The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
- UJ** The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- ug/kg** microgram(s) per kilogram

Source Sediment SVOCs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E18

Analyte	CAS NO	Units	SCDM RDSC	SCDM CRSC	Location Sample ID Date Type	North Percolation Ponds					South Percolation Ponds		
						SD-17 CF-SD-17 9/30/2013 Field Sample	SD-18 CF-SD-18 9/30/2013 Field Sample	SD-19 CF-SD-19 9/30/2013 Field Sample	SD-19 CF-SD-19 9/30/2013 Field Duplicate	SD-20 CF-SD-20 9/30/2013 Field Sample	SD-21 CF-SD-21 9/30/2013 Field Sample	SD-22 CF-SD-22 10/1/2013 Field Sample	
SVOCs													
1,1'-Biphenyl	92-52-4	mg/kg	NE	NE	--	9.2R	0.084J	220R	230R	15R	12R	0.4U	
1,2,4,5-Tetrachlorobenzene	95-94-3	mg/kg	23	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2,2'-Oxybis(1-chloropropane)	108-60-1	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2,3,4,6-Tetrachlorophenol	58-90-2	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2,4,5-Trichlorophenol	95-95-4	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2,4,6-Trichlorophenol	88-06-2	mg/kg	NE	S8	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2,4-Dichlorophenol	120-83-2	mg/kg	230	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2,4-Dimethylphenol	105-67-9	mg/kg	1600	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2,4-Dinitrophenol	51-28-5	mg/kg	NE	NE	--	18R	0.43R	440R	460R	30R	24R	0.78U	
2,4-Dinitrotoluene	121-14-2	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2,6-Dinitrotoluene	606-20-2	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2-Chloronaphthalene	91-58-7	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2-Chlorophenol	95-57-8	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2-Methylnaphthalene	91-57-6	mg/kg	0.014	NE	--	0.076J	0.59J	13J	13J	0.17J	12R	0.4R	
2-Methylphenol	95-48-7	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
2-Nitroaniline	88-74-4	mg/kg	NE	NE	--	18R	0.43R	440R	460R	30R	24R	0.78U	
2-Nitrophenol	88-75-5	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
3,3'-Dichlorobenzidine	91-94-1	mg/kg	NE	NE	--	9.2R	0.22R	220R	0.39R	15R	12R	0.4U	
3-Nitroaniline	99-09-2	mg/kg	NE	NE	--	18R	0.43R	440R	460R	30R	24R	0.78U	
4,6-Dinitro-2-methylphenol	534-52-1	mg/kg	NE	NE	--	18R	0.43R	440R	460R	30R	24R	0.78U	
4-Bromophenyl phenylether	101-55-3	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
4-Chloro-3-methylphenol	59-50-7	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
4-Chloroaniline	106-47-8	mg/kg	NE	NE	--	9.2R	0.22R	220R	0.39R	15R	12R	0.4U	
4-Chlorophenyl phenylether	7005-72-3	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
4-Methylphenol	106-44-5	mg/kg	390	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
4-Nitroaniline	100-01-6	mg/kg	NE	NE	--	18R	0.43R	440R	460R	30R	24R	0.78U	
4-Nitrophenol	100-02-7	mg/kg	NE	NE	--	18R	0.43R	440R	460R	30R	24R	0.78U	
Acenaphthene	83-32-9	mg/kg	0.41	NE	--	9.2R	3.8J	21J	71J	4.8R	0.3J	0.4R	
Acenaphthylene	208-96-8	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4R	
Acetophenone	98-86-2	mg/kg	NE	NE	--	9.2R	0.22R	220R	0.27J	15R	12R	0.4U	
Anthracene	120-12-7	mg/kg	4.2	NE	--	2R	330J	64J	220J	9.6J	12R	0.4R	
Atrazine	1912-24-9	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Benzaldehyde	100-52-7	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Benz(a)anthracene	56-55-3	mg/kg	0.01	NE	--	22J	1800J	420J	410J	71J	17J	0.19R	
Benz(a)pyrene	50-32-8	mg/kg	0.0035	0.24	--	23J	1900J	310J	310J	130J	14J	0.27R	
Benz(b)fluoranthene	205-99-2	mg/kg	0.035	NE	--	65J	2600J	850J	530J	210J	67J	0.57R	
Benz(g,h)perylene	191-24-2	mg/kg	NE	NE	--	20J	1200J	200J	150J	79J	19J	0.32R	
Benz(k)fluoranthene	207-08-9	mg/kg	0.35	NE	--	23J	1000J	230J	210J	70J	21J	0.18R	
Bis(2-chloroethoxy)methane	111-91-1	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Bis(2-Chloroethyl)ether	111-44-4	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Bis(2-ethylhexyl)phthalate	117-81-7	mg/kg	1600	46	--	0.24J	0.22R	220R	2J	15R	12R	0.4U	
Butylbenzylphthalate	85-68-7	mg/kg	16000	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Caprolactam	105-60-2	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Carbazole	86-74-8	mg/kg	NE	32	--	1.7R	210J	37R	71J	5J	3.4R	0.4U	
Chrysene	218-01-9	mg/kg	1.1	NE	--	29J	2200J	1100J	660J	120J	76J	0.4R	
Dibenz(a,h)anthracene	53-70-3	mg/kg	0.011	NE	--	6.2J	300J	60J	21J	22J	4.7J	0.11R	
Dibenzofuran	132-64-9	mg/kg	78	NE	--	9.2R	1.5J	220R	19J	15R	12R	0.4U	
Diethylphthalate	84-66-2	mg/kg	63000	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Dimethylphthalate	131-11-3	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Di-n-butylphthalate	84-74-2	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	0.093J	0.4U	
Di-n-octylphthalate	117-84-0	mg/kg	1600	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Fluoranthene	206-44-0	mg/kg	7	NE	--	36J	3900J	1200J	2100J	140J	36J	0.32R	
Fluorene	86-73-7	mg/kg	0.4	NE	--	0.26J	3.1J	41J	66J	2.7R	0.23J	0.4R	
Hexachlorobenzene	118-74-1	mg/kg	63	0.4	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Hexachlorobutadiene	87-68-3	mg/kg	16	8.2	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Hexachlorocyclopentadiene	77-47-4	mg/kg	NE	NE	--	9.2R	0.22R	220R	0.39R	15R	12R	0.4U	
Hexachloroethane	67-72-1	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	0.2	NE	--	23J	1300J	200J	170J	85J	22J	0.37R	
Isophorone	78-59-1	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Naphthalene	91-20-3	mg/kg	0.00047	NE	--	0.16J	1.5J	220R	5.6J	0.36J	12R	0.4R	
Nitrobenzene	98-95-3	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
N-Nitrosodi-n-propylamine	621-64-7	mg/kg	NE	NE	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
N-Nitrosodiphenylamine	86-30-6	mg/kg	NE	130	--	9.2R	0.22R	220R	230R	15R	12R	0.4U	
Pentachlorophenol	87-86-5	mg/kg	0.00036	0.01	--	18R	0.43R	440R	460R	30R	24R	0.78R	
Phenanthrene	85-01-8	mg/kg	NE	NE	--	9.3J	50R	280J	1200J	40J	4.5R	0.11R	
Phenol	108-95-2	mg/kg	23000	NE	--	9.2R	0.22R	220R	0.17J	15R	12R	0.4U	
Pyrene	129-00-0	mg/kg	0.95	NE	--	35J	3400J	990J	1700J	160J	31J	0.4R	

Notes:

- Bold**: The analyte was detected above the method detection limit
- J**: The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- NE**: None Established
- R**: The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U**: The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
- ug/kg: micigram(s) per kilogram

Source Sediment PAHs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E19

Analyte	CAS.NO	Units	Location Sample ID	South Percolation Ponds	
				Date	Type
SVOC SIM					
2-Methylnaphthalene	91-57-6	mg/kg	--	0.078R	
Acenaphthene	83-32-9	mg/kg	--	0.01J	
Acenaphthylene	208-96-8	mg/kg	--	0.078R	
Anthracene	120-12-7	mg/kg	--	0.025R	
Benzo(a)anthracene	56-55-3	mg/kg	--	0.21R	
Benzo(a)pyrene	50-32-8	mg/kg	--	0.23R	
Benzo(b)fluoranthene	205-99-2	mg/kg	--	0.81R	
Benzo(g,h,l)perylene	191-24-2	mg/kg	--	0.14R	
Benzo(k)fluoranthene	207-08-9	mg/kg	--	0.21R	
Chrysene	218-01-9	mg/kg	--	0.42R	
Dibenzo(a,h)anthracene	53-70-3	mg/kg	--	0.048R	
Fluoranthene	206-44-0	mg/kg	--	0.4R	
Fluorene	86-73-7	mg/kg	--	0.078R	
Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	--	0.23R	
Naphthalene	91-20-3	mg/kg	--	0.0036J	
Pentachlorophenol	87-86-5	mg/kg	--	0.0045J	
Phenanthrene	85-01-8	mg/kg	--	0.13R	
Pyrene	129-00-0	mg/kg	--	0.16J	

Notes:

- Bold** The analyte was detected above the method detection limit
- J** The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- NE** None Established
- R** The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be
- ug/kg micrigram(s) per kilogram
- CRSC Cancer Risk Screening Concentration
- EPA United States Environmental Protection Agency
- RDSC Reference Dose Screening Concentration
- SCDM Superfund Chemical Data Matrix

Table E20

Source Sediment Pesticides Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS NO	Units	Location Sample ID Date Type	North Percolation Ponds					South Percolation Ponds		
				SD-17 CF-SD-17 9/30/2013 Field Sample	SD-18 CF-SD-18 9/30/2013 Field Sample	SD-19 CF-SD-19 9/30/2013 Field Sample	SD-19 CF-SD-25 9/30/2013 Field Duplicate	SD-20 CF-SD-20 9/30/2013 Field Sample	SD-21 CF-SD-21 10/1/2013 Field Sample	SD-22 CF-SD-22 10/1/2013 Field Sample	
Pesticides											
4,4'-DDD	72-54-8	mg/kg	--	0.005J	0.024J	0.015R	0.15R	0.066NJ	0.008U	0.0078U	
4,4'-DDE	72-55-9	mg/kg	--	0.012J	0.092R	0.15J	0.27J	0.092J	0.057J	0.0078U	
4,4'-DDT	50-29-3	mg/kg	--	0.0044NJ	0.076J	0.078NJ	0.071NJ	0.026J	0.0033NJ	0.0078U	
Aldrin	309-00-2	mg/kg	--	0.0031U	0.044R	0.075R	0.077R	0.0017NJ	0.0041U	0.004U	
alpha-BHC	319-84-6	mg/kg	--	0.0031U	0.044R	0.075R	0.077R	0.026R	0.0041U	0.001J	
alpha-Chlordane	5103-71-9	mg/kg	--	0.0031U	0.044R	0.3NJ	0.15J	0.026R	0.0041U	0.004U	
beta-BHC	319-85-7	mg/kg	--	0.0031U	0.23NJ	0.075R	0.7J	0.026R	0.0089NJ	0.004U	
delta-BHC	319-86-8	mg/kg	--	0.0031U	0.044R	0.0043NJ	0.077R	0.026R	0.0041U	0.004U	
Dieldrin	60-57-1	mg/kg	--	0.0025NJ	0.068J	0.11NJ	0.16J	0.03J	0.0096J	0.0078U	
Endosulfan I	959-98-8	mg/kg	--	0.0017J	0.044R	0.034J	0.077R	0.051J	0.0041U	0.004U	
Endosulfan II	33213-65-9	mg/kg	--	0.0036J	0.08J	0.14NJ	0.29J	0.029NJ	0.0066NJ	0.0078U	
Endosulfan sulfate	1031-07-8	mg/kg	--	0.006U	0.64J	0.17J	0.15R	0.19NJ	0.008U	0.0078U	
Endrin	72-20-8	mg/kg	--	0.006U	0.06NJ	0.26NJ	0.18J	0.025R	0.003NJ	0.0078U	
Endrin aldehyde	7421-93-4	mg/kg	--	0.006U	0.29J	0.038NJ	0.21NJ	0.0055NJ	0.008U	0.0078U	
Endrin ketone	53494-70-5	mg/kg	--	0.082J	0.51J	0.089NJ	0.52J	0.21J	0.11J	0.0078U	
gamma-BHC (Lindane)	58-89-9	mg/kg	--	0.0031U	0.044R	0.075R	0.077R	0.026R	0.0041U	0.004U	
gamma-Chlordane	5103-74-2	mg/kg	--	0.018J	0.39R	0.4R	0.4J	0.11J	0.027J	0.004U	
Heptachlor	76-44-8	mg/kg	--	0.0031U	0.044R	0.075R	0.077R	0.026R	0.0041U	0.004U	
Heptachlor epoxide	1024-57-3	mg/kg	--	0.0031U	0.044R	0.036J	0.077R	0.0067J	0.0021J	0.004U	
Methoxychlor	72-43-5	mg/kg	--	0.23J	2.2NJ	2J	1.3NJ	0.44J	0.31NJ	0.04U	
Toxaphene	8001-35-2	mg/kg	--	0.31U	4.4R	7.5R	7.7R	2.6R	0.41U	0.4U	

Notes:

- Bold** The analyte was detected above the method detection limit
- J** The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- NE** None Established
- NJ** The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- R** The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U** The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
- ug/kg** micigram(s) per kilogram
- CRSC** Cancer Risk Screening Concentration
- EPA** United States Environmental Protection Agency
- RDSC** Reference Dose Screening Concentration
- SCDM** Superfund Chemical Data Matrix

Source Sediment PCBs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E21

Analyte	CAS.NO	Units	Location Sample ID Date Type	North Percolation Ponds					South Percolation Ponds		
				SD-17 CF-SD-17 9/30/2013 Field Sample	SD-18 CF-SD-18 9/30/2013 Field Sample	SD-19 CF-SD-19 9/30/2013 Field Sample	SD-19 CF-SD-25 9/30/2013 Field Duplicate	SD-20 CF-SD-20 9/30/2013 Field Sample	SD-21 CF-SD-21 10/1/2013 Field Sample	SD-22 CF-SD-22 10/1/2013 Field Sample	
PCBs											
Aroclor-1016	12674-11-2	mg/kg	--	0.06U	0.043UJ	0.14U	0.075UJ	0.099UJ	0.08UJ	0.078U	
Aroclor-1221	11104-28-2	mg/kg	--	0.06U	0.043UJ	0.14U	0.075UJ	0.099UJ	0.08UJ	0.078U	
Aroclor-1232	11141-16-5	mg/kg	--	0.06U	0.043UJ	0.14U	0.075UJ	0.099UJ	0.08UJ	0.078U	
Aroclor-1242	53469-21-9	mg/kg	--	0.06U	0.043UJ	0.14U	0.075UJ	0.099UJ	0.08UJ	0.078U	
Aroclor-1248	12672-29-6	mg/kg	--	0.06U	0.043UJ	0.14U	0.075UJ	0.099UJ	0.08UJ	0.078U	
Aroclor-1254	11097-69-1	mg/kg	--	0.06U	0.043UJ	0.14U	0.075UJ	0.099UJ	0.3J	0.078U	
Aroclor-1260	11096-82-5	mg/kg	--	0.06U	0.043UJ	0.14U	0.075UJ	0.099UJ	0.08UJ	0.078U	
Aroclor-1262	37324-23-5	mg/kg	--	0.06U	0.043UJ	0.14U	0.075UJ	0.099UJ	0.08UJ	0.078U	
Aroclor-1268	11100-14-4	mg/kg	--	0.06U	0.043UJ	0.14U	0.075UJ	0.099UJ	0.08UJ	0.078U	

Notes:

- Bold** The analyte was detected above the method detection limit
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- NE None Established
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
- UJ The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- ug/kg micigram(s) per kilogram
- CRSC Cancer Risk Screening Concentration
- EPA United States Environmental Protection Agency
- RDSC Reference Dose Screening Concentration
- SCDM Superfund Chemical Data Matrix

Source Sediment TAL Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E22

Analyte	CAS.NO	Units	Location Sample ID Date Type	North Percolation Ponds					South Percolation Ponds		
				SD-17 CF-SD-17 9/30/2013 Field Sample	SD-18 CF-SD-18 9/30/2013 Field Sample	SD-19 CF-SD-19 9/30/2013 Field Sample	SD-19 CF-SD-25 9/30/2013 Field Duplicate	SD-20 CF-SD-20 9/30/2013 Field Sample	SD-21 CF-SD-21 10/1/2013 Field Sample	SD-22 CF-SD-22 10/1/2013 Field Sample	
Metals											
Aluminum	7429-90-5	mg/kg	--	58900	17400	155000	68500	42700	55200	8430	
Antimony	7440-36-0	mg/kg	--	1.3J-	0.61J-	3.2J-	10.3UJ	2.3J-	3.9J-	11.8UJ	
Arsenic	7440-38-2	mg/kg	--	17.8	5.8	43.3	15.3	10.5	7.5	2.3	
Barium	7440-39-3	mg/kg	--	437J-	87.4J-	681J-	402J-	311J-	367J-	554J-	
Beryllium	7440-41-7	mg/kg	--	3.7	0.64	42.1	15.7	2.1	1.2	0.98U	
Cadmium	7440-43-9	mg/kg	--	5.8	1.2	14	3.8	4	2.4	0.98U	
Calcium	7440-70-2	mg/kg	--	9670J	2170J	125000J	69500J	53800J	257000J	107000J	
Chromium	7440-47-3	mg/kg	--	43.6	34.8	36.1	21.5	21.1	18.5	9.1	
Cobalt	7440-48-4	mg/kg	--	8.2	5.3U	20.9	8.6U	10.7U	9.2U	9.8U	
Copper	7440-50-8	mg/kg	--	117	19.5	12.7	13.4	100	961	26.6	
Cyanide	57-12-5	mg/kg	--	5.1J-	0.24J	172J-	106J-	2.9J-	6	1U	
Iron	7439-89-6	mg/kg	--	5560	3740	6970	4740	4880	7470	9200	
Lead	7439-92-1	mg/kg	--	64.8	29.9	433	169	50.6	195	7.4	
Magnesium	7439-95-4	mg/kg	--	2490	1500	9370	5720	2190	2070	9240	
Manganese	7439-96-5	mg/kg	--	97.5	63.3	106	61.4	29.3	57.5	83.4	
Mercury	7439-97-6	mg/kg	--	0.076J	0.014J	0.075J	0.027J	0.063J	0.54	0.016J	
Nickel	7440-02-0	mg/kg	--	391	133	1050	454	363	103	14	
Potassium	7440-09-7	mg/kg	--	768U	530U	1750	855U	1070U	919U	1190	
Selenium	7782-49-2	mg/kg	--	5.4UJ	3.7UJ	1.4J-	6UJ	7.5UJ	6.4UJ	6.9UJ	
Silver	7440-22-4	mg/kg	--	1.5U	1.1U	1U	1.7U	2.1U	1.8U	2U	
Sodium	7440-23-5	mg/kg	--	768U	530U	2250	1430	1070U	919U	983U	
Thallium	7440-28-0	mg/kg	--	0.53J+	2.7U	11.4	4J+	0.82J+	0.96J+	4.9U	
Vanadium	7440-62-2	mg/kg	--	79.8	55.1	195	108	97.5	36	12.8	
Zinc	7440-66-6	mg/kg	--	814	128	565	235	431	982	45.4	

Notes:

- Bold** The analyte was detected above the method detection limit
- J The associated value is an estimated quantity.
- Result is biased low
- + Result is biased high
- NE None Established
- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
- mg/kg milligram(s) per kilogram
- CRSC Cancer Risk Screening Concentration
- EPA United States Environmental Protection Agency
- RDSC Reference Dose Screening Concentration
- SCDM Superfund Chemical Data Matrix

Source Sediment General Chemistry Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E23

Analyte	CAS.NO	Units	Location Sample ID Date Type	North Percolation Ponds					South Percolation Ponds		
				SD-17 CF-SD-17 9/30/2013 Field Sample	SD-18 CF-SD-18 9/30/2013 Field Sample	SD-19 CF-SD-19 9/30/2013 Field Sample	SD-19 CF-SD-25 9/30/2013 Field Duplicate	SD-20 CF-SD-20 9/30/2013 Field Sample	SD-21 CF-SD-21 10/1/2013 Field Sample	SD-22 CF-SD-22 10/1/2013 Field Sample	
GENCHEM											
Fluoride	16984-48-8	mg/kg	--	30.3	22.7	275	206	230	36.6	4.3	

Notes:

Bold The analyte was detected above the reporting limit

mg/kg milligram(s) per kilogram

Table E24

Ground Water VOCs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS NO	Units	SCDM MCL/MCLG	SCDM RDSC	SCDM CRSC	EPA Tapwater	Montana Human Health	Location	Sample ID	Background Wells		On-Site Wells					Residential Wells				
										MW-01 CF-GW-MW-01 9/26/2013 Field Sample	MW-01 CF-GW-MW-18 9/26/2013 Field Duplicate	MW-08 CF-GW-MW-08 9/24/2013 Field Sample	MW-09 CF-GW-MW-09 9/24/2013 Field Sample	MW-10 CF-GW-MW-10 9/25/2013 Field Sample	MW-11 CF-GW-MW-11 9/25/2013 Field Sample	MW-12 CF-GW-MW-12 9/26/2013 Field Sample	MW-13 CF-GW-MW-13 9/26/2013 Field Sample	MW-14 CF-GW-MW-14 9/26/2013 Field Sample	MW-15 CF-GW-MW-15 9/26/2013 Field Sample	GW-OP-02 CF-GW-OP-02 10/1/2013 Field Sample	
VOCs																					
1,1,1-Trichloroethane	71-55-6	ug/L	200	NE	NE	7500	200	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,1,2-Tetrachloroethane	79-34-5	ug/L	NE	NE	0.43	0.066	NE	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ug/L	NE	NE	NE	53000	NE	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,1,2-Trichloroethane	79-00-5	ug/L	3	150	1.5	0.24	3	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,1-Dichloroethane	75-34-3	ug/L	NE	3700	NE	2.4	NE	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,1-Dichloroethene	75-35-4	ug/L	7	1800	NE	260	7	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,2,3-Trichlorobenzene	87-61-6	ug/L	NE	NE	NE	5.2	NE	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,2,4-Trichlorobenzene	120-82-1	ug/L	70	360	NE	0.99	70	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,2-Dibromo-3-chloropropane	96-12-8	ug/L	0.2	NE	0.061	0.00032	0.2	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,2-Dibromoethane	106-93-4	ug/L	NE	NE	0.001	0.0065	0.004	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,2-Dichlorobenzene	95-50-1	ug/L	NE	NE	NE	280	600	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,2-Dichloroethane	107-06-2	ug/L	5	NE	0.94	0.15	4	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,2-Dichloropropane	78-87-5	ug/L	5	NE	1.3	0.38	5	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,3-Dichlorobenzene	541-73-1	ug/L	NE	NE	NE	600	--			0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
1,4-Dichlorobenzene	106-46-7	ug/L	75	NE	3.5	0.42	75	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
2-Butanone	78-93-3	ug/L	NE	22000	NE	4900	NE	--		5U	5U	5U	3.5J	5R	5R	5U	5U	5U	5U		
2-Hexanone	591-78-6	ug/L	NE	NE	34	NE	--			5U	5U	5U	5R	5R	5U	5U	5U	5U	5U		
4-Methyl-2-pentanone	108-10-1	ug/L	NE	2900	NE	1000	NE	--		5U	5U	5U	5R	5R	5U	5U	5U	5U	5U		
Acetone	67-64-1	ug/L	NE	33000	NE	12000	NE	--		5U	5U	5U	4.7U	5R	5R	5U	5U	5U	5U		
Benzene	71-43-2	ug/L	5	150	1.5	0.39	5	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
Bromochloromethane	74-97-5	ug/L	NE	NE	NE	83	NE	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
Bromodichloromethane	75-27-4	ug/L	NE	730	1.4	0.12	10	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
Bromoform	75-25-2	ug/L	NE	NE	7.9	80	--			0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
Bromomethane	74-83-9	ug/L	NE	51	NE	7	10	--		0.5UJ	0.5UJ	0.5R	0.75J	0.5R	0.5U	0.5U	0.5U	0.5U	0.5R		
Carbon disulfide	75-15-0	ug/L	NE	3700	NE	720	NE	--		0.5U	0.5U	0.5U	0.28U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U	
Carbon tetrachloride	56-23-5	ug/L	5	26	0.66	0.39	3	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
Chlorobenzene	108-90-7	ug/L	100	730	NE	72	100	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
Chloroethane	75-00-3	ug/L	NE	NE	21000	NE	--			0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
Chloroform	67-66-3	ug/L	NE	360	NE	0.19	70	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
Chloromethane	74-87-3	ug/L	NE	NE	NE	190	30	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
cis-1,2-Dichloroethene	156-59-2	ug/L	70	360	NE	28	70	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
cis-1,3-Dichloropropene	10061-01-5	ug/L	NE	NE	NE	4	--			0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
Cyclohexane	110-82-7	ug/L	NE	NE	NE	13000	NE	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
Dibromochloromethane	124-48-1	ug/L	NE	NE	NE	0.15	4	--		0.5U	0.5U	0.5U	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U		
Dichlorodifluoromethane	75-71-8	ug/L	NE	NE	NE	190	1000	--		0.5U	0.5U	0.5U	6.2	0.5R	0.5R	0.5U	0.5U	0.5U	0.5U	0.5U	
Ethylbenzene	100-41-4	ug/L	700	3700	NE	1.3	700	--		0.5U	0.5U	0.5U</									

Ground Water SVOCs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO.	Units	SCDM	SCDM/RDSC	SCDM/CRSC	EPA Tapwater	Montana Human Health	Location Sample ID Date Type	Background Wells		On-Site Wells					Residential Wells				
									MW-01 CF-GW-MW-01 9/26/2013 Field Sample	MW-03 CF-GW-MW-14 9/26/2013 Field Duplicate	MW-08 CF-GW-MW-08 9/26/2013 Field Sample	MW-09 CF-GW-MW-09 9/26/2013 Field Sample	MW-10 CF-GW-MW-10 9/26/2013 Field Sample	MW-11 CF-GW-MW-11 9/26/2013 Field Sample	MW-12 CF-GW-MW-12 9/26/2013 Field Sample	MW-13 CF-GW-MW-13 9/26/2013 Field Sample	MW-14 CF-GW-MW-14 9/26/2013 Field Sample	MW-15 CF-GW-MW-15 9/26/2013 Field Sample	GW-OP-02 CF-GW-OP-02 10/1/2013 Field Sample	
SVOCs																				
1,1'-Biphenyl	92-52-4	ug/L	NE	NE	NE	0.83	NE	-	5U	5U	4.8U	4.8U	5U							
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/L	NE	11	NE	1.2	2	-	5U	5U	4.8U	4.8U	5U							
2,2'-Oxybis(1-chloropropane)	108-60-1	ug/L	NE	NE	NE	0.31	NE	-	5U	5U	4.8U	4.8U	5U							
2,3,4,6-Tetrachlorophenol	58-90-2	ug/L	NE	NE	NE	170	NE	-	5U	5U	4.8U	4.8U	5U							
2,4,5-Trichlorophenol	95-95-4	ug/L	NE	NE	NE	890	1800	-	5U	5U	4.8U	4.8U	5U							
2,4,6-Trichlorophenol	88-06-2	ug/L	NE	NE	7.7	3.5	30	-	5U	5U	4.8U	4.8U	5U							
2,4-Dichlorophenol	120-83-2	ug/L	NE	110	NE	35	77	-	5U	5U	4.8U	4.8U	5U							
2,4-Dimethylphenol	105-67-9	ug/L	NE	730	NE	270	380	-	5U	5U	4.8U	4.8U	5U							
2,4-Dinitrophenol	51-28-5	ug/L	NE	NE	NE	30	69	-	10U	10U	9.6U	9.5U	10U							
2,4-Dinitrotoluene	121-14-2	ug/L	NE	NE	NE	0.2	1.1	-	5U	5U	4.8U	4.8U	5U							
2,6-Dinitrotoluene	606-20-2	ug/L	NE	NE	NE	0.042	0.5	-	5U	5U	4.8U	4.8U	5U							
2-Chloronaphthalene	91-58-7	ug/L	NE	NE	NE	550	NE	-	5U	5U	4.8U	4.8U	5U							
2-Chlorophenol	95-57-8	ug/L	NE	NE	NE	71	NE	-	5U	5U	4.8U	4.8U	5U							
2-Methylnaphthalene	91-57-1	ug/L	NE	NE	NE	27	NE	-	5R	5R	4.8R	4.8R	5R							
2-Methylphenol	95-48-7	ug/L	NE	NE	NE	720	NE	-	5U	5U	4.8U	4.8U	5U							
2-Nitroaniline	88-74-4	ug/L	NE	NE	NE	150	NE	-	10U	10U	9.6U	9.5U	10U							
2-Nitrophenol	88-75-5	ug/L	NE	NE	NE	NE	NE	-	5U	5U	4.8U	4.8U	5U							
3,3'-Dichlorobenzidine	91-94-1	ug/L	NE	NE	NE	0.11	0.21	-	5R	5R	4.8U	4.8U	5R							
3-Nitroaniline	99-09-2	ug/L	NE	NE	NE	NE	NE	-	10U	10U	9.6U	9.5U	10U							
4,6-Dinitro-2-methylphenol	534-52-1	ug/L	NE	NE	NE	1.2	13	-	10U	10U	9.6U	9.5U	10U							
4-Bromophenyl-phenylether	101-55-3	ug/L	NE	NE	NE	NE	NE	-	5U	5U	4.8U	4.8U	5U							
4-Chloro-3-methylphenol	59-50-7	ug/L	NE	NE	NE	1100	3000	-	5U	5U	4.8U	4.8U	5U							
4-Chloroaniline	106-47-8	ug/L	NE	NE	NE	0.32	NE	-	5R	5R	4.8U	4.8U	5U	5R	5R	5R	5R	5R	5R	
4-Chlorophenyl-phenylether	7005-72-3	ug/L	NE	NE	15	NE	NE	-	5U	5U	4.8U	4.8U	5U							
4-Methylphenol	106-44-5	ug/L	NE	180	NE	1400	NE	-	5U	5U	4.8U	15	5U							
4-Nitroaniline	100-01-6	ug/L	NE	NE	3.3	NE	-	10U	10U	9.6U	9.5U	10U								
4-Nitrophenol	100-02-7	ug/L	NE	NE	60	-	-	10U	10U	9.6U	9.5U	10U								
Acenaphthene	83-32-9	ug/L	NE	2200	NE	400	670	-	5R	5R	4.8R	4.8R	5R							
Acenaphthylene	208-96-8	ug/L	NE	NE	NE	NE	NE	-	5R	5R	4.8R	4.8R	5R							
Acetophenone	98-86-2	ug/L	NE	NE	1500	NE	-	5U	5U	4.8U	4.8U	5U								
Anthracene	120-12-7	ug/L	NE	11000	NE	1300	2100	-	5R	5R	4.8R	4.8R	5R							
Atrazine	1912-24-9	ug/L	NE	NE	0.26	3	-	5U	5U	4.8U	4.8U	5U								
Benzaldehyde	100-52-7	ug/L	NE	NE	NE	1500	NE	-	5UJ	5UJ	4.8U	4.8U	5UJ							
Benz(a)anthracene	56-55-3	ug/L	NE	NE	0.12	0.029	0.5	-	5R	5R	4.8R	4.8R	5R							
Benz(a)pyrene	50-32-8	ug/L	0.2	NE	0.012	0.0029	0.05	-	5R	5R	4.8R	4.8R	5R							
Benz(b)fluoranthene	205-99-2	ug/L	NE	NE	0.029	0.05	-	5R	5R	4.8R	4.8R	5R								
Benz(g,h,i)perylene	191-24-2	ug/L	NE	NE	NE	NE	NE	-	5R	5R	4.8R	4.8R	5R							
Benz(k)fluoranthene	207-08-9	ug/L	NE	NE	1.2	0.29	5	-	5R	5R	4.8R	4.8R	5R							
Bis(2-chloroethoxy)methane	111-91-1	ug/L	NE	NE</																

Table E26

Ground Water PAHs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	MCL/MCLG	SCDM	SCDM RDSC	SCDM CRSC	EPA Tapwater	Montana Human Health	Location Sample ID	Date	Background Wells		On-Site Wells				Residential Wells				
											MW-01 CF-GW-MW-01 9/26/2013	MW-01 CF-GW-MW-18 9/26/2013	MW-08 CF-GW-MW-08 9/24/2013	MW-09 CF-GW-MW-09 9/24/2013	MW-10 CF-GW-MW-10 9/25/2013	MW-11 CF-GW-MW-11 9/25/2013	MW-12 CF-GW-MW-12 9/26/2013	MW-13 CF-GW-MW-13 9/26/2013	MW-14 CF-GW-MW-14 9/26/2013	MW-15 CF-GW-MW-15 9/26/2013	GW-OP-02 CF-GW-OP-02 10/1/2013
SVOC SIM																					
2-Methylnaphthalene	91-57-6	ug/L	NE	NE	27	NE	--	0.1U	0.1U	0.099U	0.093U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.13U			
Acenaphthene	83-32-9	ug/L	NE	2200	NE	400	670	--	0.1U	0.1U	0.099U	0.093U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U			
Acenaphthylene	208-96-8	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.099U	0.093U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U				
Anthracene	120-12-7	ug/L	NE	11000	NE	1300	2100	--	0.1U	0.1U	0.099U	0.093U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U			
Benzo(a)anthracene	56-55-3	ug/L	NE	NE	0.12	0.029	0.5	--	0.1U	0.1U	0.099U	0.052J	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U			
Benzo(a)pyrene	50-32-8	ug/L	0.2	NE	0.012	0.0029	0.05	--	0.1U	0.1U	0.099U	0.038J	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U			
Benzo(b)fluoranthene	205-99-2	ug/L	NE	NE	NE	0.029	0.05	--	0.1U	0.1U	0.099U	0.08J	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U			
Benzo(g,h,i)perylene	191-24-2	ug/L	NE	NE	NE	NE	NE	--	0.1U	0.1U	0.099U	0.037J	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U			
Benzo(k)fluoranthene	207-08-9	ug/L	NE	1.2	0.29	5	--	0.1U	0.1U	0.099U	0.033J	0.1U									
Chrysene	218-01-9	ug/L	NE	12	2.9	50	--	0.1U	0.1U	0.099U	0.065J	0.1U									
Dibenzo(a,h)anthracene	53-70-3	ug/L	NE	NE	0.012	0.0029	NE	--	0.1U	0.1U	0.099U	0.093U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U			
Fluoranthene	206-44-0	ug/L	NE	1500	NE	630	130	--	0.1U	0.1U	0.099U	0.1	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U			
Fluorene	86-73-7	ug/L	NE	1500	NE	220	1100	--	0.1U	0.1U	0.099U	0.093U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U			
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	NE	0.12	0.029	0.5	--	0.1U	0.1U	0.099U	0.044J	0.1U									
Naphthalene	91-20-3	ug/L	NE	1500	NE	0.14	100	--	0.1U	0.1U	0.099U	0.093U	0.1U	0.1U	0.1U	0.1U	0.1U	0.99			
Pentachlorophenol	87-86-5	ug/L	1	1100	0.71	0.035	1	--	0.2R	0.2R	0.2U	0.19U	0.2R	0.2R	0.2R	0.2R	0.2R	0.2R			
Phenanthrene	85-01-8	ug/L	NE	NE	NE	NE	NE	--	0.1U	0.1U	0.099U	0.1U									
Pyrene	129-00-0	ug/L	NE	1100	NE	87	830	--	0.1U	0.1U	0.099U	0.055J	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U			

Notes:

- Bold** The analyte was detected above the method detection limit
J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NE None Established
R The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
ug/L microgram(s) per liter
CRSC Cancer Risk Screening Concentration
EPA United States Environmental Protection Agency
MCL Maximum Contaminant Level
MCLG Maximum Contaminant Level Goal
RDSC Reference Dose Screening Concentration
SCDM Superfund Chemical Data Matrix

Table E27

Ground Water Pesticides Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS NO	Units	SCDM MCL/MCLG	SCDM RDSC	SCDM CRSC	EPA Tapwater	Montana Human Health	Location Sample ID Date Type	Background Wells		On-Site Wells					Residential Wells				
									MW-01 CF-GW-MW-01 9/26/2013 Field Sample	MW-01 CF-GW-MW-18 9/26/2013 Field Duplicate	MW-08 CF-GW-MW-08 9/24/2013 Field Sample	MW-09 CF-GW-MW-09 9/24/2013 Field Sample	MW-10 CF-GW-MW-10 9/25/2013 Field Sample	MW-11 CF-GW-MW-11 9/25/2013 Field Sample	MW-12 CF-GW-MW-12 9/26/2013 Field Sample	MW-13 CF-GW-MW-13 9/26/2013 Field Sample	MW-14 CF-GW-MW-14 9/26/2013 Field Sample	MW-15 CF-GW-MW-15 9/26/2013 Field Sample	GW-OP-02 CF-GW-OP-02 10/1/2013 Field Sample	
									Pesticides											
4,4'-DDD	72-54-8	ug/L	NE	NE	0.35	0.027	0.0031	--	0.1U	0.1U	0.094U	0.093U	0.1U							
4,4'-DDE	72-55-9	ug/L	NE	NE	0.25	0.2	0.0022	--	0.1U	0.1U	0.094U	0.093U	0.1U							
4,4'-DDT	50-29-3	ug/L	NE	18	0.25	0.2	0.0022	--	0.1U	0.1U	0.094U	0.093U	0.1U							
ALDRIN	309-00-2	ug/L	NE	1.1	0.005	0.004	0.02	--	0.05U	0.05U	0.047U	0.046U	0.051U	0.051U	0.05U	0.05U	0.051U	0.051U	0.051U	
ALPHA-BHC	319-84-6	ug/L	NE	NE	0.014	0.0062	0.026	--	0.05U	0.05U	0.047U	0.046J	0.051U	0.051U	0.05U	0.05U	0.051U	0.051U	0.051U	
ALPHA-CHLORDANE	5103-71-9	ug/L	NE	18	0.24	NE	1	--	0.05U	0.05U	0.047U	0.046U	0.051U	0.051U	0.05U	0.05U	0.051U	0.051U	0.051U	
BETA-BHC	319-85-7	ug/L	NE	NE	0.047	0.022	0.091	--	0.05U	0.05U	0.047U	0.04N	0.051U	0.051U	0.05U	0.05U	0.051U	0.051U	0.051U	
DELTA-BHC	319-86-8	ug/L	NE	NE	NE	NE	NE	--	0.05U	0.05U	0.047U	0.046U	0.051U	0.051U	0.05U	0.05U	0.051U	0.051U	0.051U	
DIELDRIN	60-57-1	ug/L	NE	1.8	0.0053	0.0015	0.02	--	0.1U	0.1U	0.094U	0.093U	0.1U							
ENDOSULFAN I	959-98-8	ug/L	NE	220	NE	NE	62	--	0.05U	0.05U	0.047U	0.046U	0.051U	0.051U	0.05U	0.05U	0.051U	0.051U	0.051U	
ENDOSULFAN II	33213-65-9	ug/L	NE	220	NE	NE	62	--	0.1U	0.1U	0.094U	0.093U	0.1U							
ENDOSULFAN SULFATE	1031-07-8	ug/L	NE	NE	NE	NE	62	--	0.1U	0.1U	0.094U	0.093U	0.1U							
ENDRIN	72-20-8	ug/L	2	11	NE	1.7	2	--	0.1U	0.1U	0.094U	0.093U	0.1U							
ENDRIN ALDEHYDE	7421-93-4	ug/L	NE	NE	NE	NE	0.29	--	0.1U	0.1U	0.094U	0.093U	0.1U							
ENDRIN KETONE	53494-70-5	ug/L	NE	NE	NE	NE	NE	--	0.1U	0.1U	0.094U	0.093U	0.1U							
GAMMA-BHC (LINDANE)	58-89-9	ug/L	0.2	11	0.066	0.036	0.2	--	0.05U	0.05U	0.047U	0.022N	0.051U	0.051U	0.05U	0.05U	0.051U	0.051U	0.051U	
GAMMA-CHLORDANE	5103-74-2	ug/L	NE	NE	NE	NE	NE	--	0.05U	0.05U	0.047U	0.046U	0.051U	0.051U	0.05U	0.05U	0.051U	0.051U	0.051U	
HEPTACHLOR	76-44-8	ug/L	0.4	18	0.019	0.0018	0.08	--	0.05U	0.05U	0.047U	0.046U	0.051U	0.051U	0.05U	0.05U	0.051U	0.051U	0.051U	
HEPTACHLOR EPOXIDE	1024-57-3	ug/L	0.2	0.47	0.0094	0.0033	0.04	--	0.05U	0.05U	0.047U	0.046U	0.051U	0.051U	0.05U	0.05U	0.051U	0.051U	0.051U	
METHOXYCHLOR	72-43-5	ug/L	40	180	NE	27	40	--	0.5U	0.5U	0.47U	0.46U	0.51U	0.51U	0.5U	0.5U	0.51U	0.51U	0.51U	
TOXAPHENE	8001-35-2	ug/L	3	NE	0.077	0.013	0.3	--	5U	5U	4.7U	4.6U	5.1U	5.1U	5U	5U	5.1U	5.1U	5.1U	

Notes:

- Bold** The analyte was detected above the method detection limit
J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NE None Established
NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
R The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
ug/L microgram(s) per liter
CRSC Cancer Risk Screening Concentration
EPA United States Environmental Protection Agency
MCL Maximum Contaminant Level
MCLG Maximum Contaminant Level Goal
RDSC Reference Dose Screening Concentration
SCDM Superfund Chemical Data Matrix

Ground Water PCBs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	SCDM MCL/MCLG	SCDM RDSC	SCDM CRSC	EPA Tapwater	Montana Human Health	Location Sample ID Date Type	Background Wells		On-Site Wells				Residential Wells					
									MW-01 CF-GW-MW-01 9/26/2013	MW-01 CF-GW-MW-18 9/26/2013	MW-08 CF-GW-MW-08 9/24/2013	MW-09 CF-GW-MW-09 9/24/2013	MW-10 CF-GW-MW-10 9/25/2013	MW-11 CF-GW-MW-11 9/25/2013	MW-12 CF-GW-MW-12 9/26/2013	MW-13 CF-GW-MW-13 9/26/2013	MW-14 CF-GW-MW-14 9/26/2013	MW-15 CF-GW-MW-15 9/26/2013	GW-OP-02 CF-GW-OP-02 10/1/2013	
PCBs																				
Aroclor-1016	12674-11-2	ug/L	NE	NE	NE	0.96	NE	--	1UJ	1UJ	0.98U	0.93U	1U	1U	1UJ	1UJ	1UJ	1UJ	1UJ	
Aroclor-1221	11104-28-2	ug/L	NE	NE	NE	0.004	NE	--	1UJ	1UJ	0.98U	0.93U	1U	1U	1UJ	1UJ	1UJ	1UJ	1UJ	
Aroclor-1232	11141-16-5	ug/L	NE	NE	NE	0.004	NE	--	1UJ	1UJ	0.98U	0.93U	1U	1U	1UJ	1UJ	1UJ	1UJ	1UJ	
Aroclor-1242	53469-21-9	ug/L	NE	NE	NE	0.034	NE	--	1UJ	1UJ	0.98U	0.93U	1U	1U	1UJ	1UJ	1UJ	1UJ	1UJ	
Aroclor-1248	12672-29-6	ug/L	NE	NE	NE	0.034	NE	--	1UJ	1UJ	0.98U	0.93U	1U	1U	1UJ	1UJ	1UJ	1UJ	1UJ	
Aroclor-1254	11097-69-1	ug/L	NE	NE	NE	0.034	NE	--	1UJ	1UJ	0.98U	0.93U	1U	1U	1UJ	1UJ	1UJ	1UJ	1UJ	
Aroclor-1260	11096-82-5	ug/L	NE	NE	NE	0.034	NE	--	1UJ	1UJ	0.98U	0.93U	1U	1U	1UJ	1UJ	1UJ	1UJ	1UJ	
Aroclor-1262	37324-23-5	ug/L	NE	NE	NE	NE	NE	--	1UJ	1UJ	0.98U	0.93U	1U	1U	1UJ	1UJ	1UJ	1UJ	1UJ	
Aroclor-1268	11100-14-4	ug/L	NE	NE	NE	NE	NE	--	1UJ	1UJ	0.98U	0.93U	1U	1U	1UJ	1UJ	1UJ	1UJ	1UJ	

Notes:

NE None Established

UJ The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

ug/L microgram(s) per liter

CRSC Cancer Risk Screening Concentration

EPA United States Environmental Protection Agency

MCL Maximum Contaminant Level

MCLG Maximum Contaminant Level Goal

RDSC Reference Dose Screening Concentration

SCDM Superfund Chemical Data Matrix

Table E29

Ground Water TAL Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	SCDM	MCL/MCLG	SCDM RDSC	SCDM CRSC	EPA Tapwater	Location Sample ID Date Type	Background Wells		Three Times Background Concentration	On-Site Wells				Residential Wells				
									MW-01 CF-GW-MW-01 9/26/2013 Field Sample	MW-01 CF-GW-MW-18 9/26/2013 Field Duplicate		MW-08 CF-GW-MW-08 9/24/2013 Field Sample	MW-09 CF-GW-MW-09 9/24/2013 Field Sample	MW-10 CF-GW-MW-10 9/25/2013 Field Sample	MW-11 CF-GW-MW-11 9/25/2013 Field Sample	MW-12 CF-GW-MW-12 9/26/2013 Field Sample	MW-13 CF-GW-MW-13 9/26/2013 Field Sample	MW-14 CF-GW-MW-14 9/26/2013 Field Sample	MW-15 CF-GW-MW-15 9/26/2013 Field Sample	GW-OP-02 CF-GW-OP-02 10/1/2013 Field Sample
Metals																				
Aluminum	7429-90-5	ug/L	NE	NE	NE	NE	16000	--	5900J-(7670)	743J-(965.9)	23010	679J-	186J-	20UJ	20U	20U	20U	409J-	20U	
Antimony	7440-36-0	ug/L	6	15	NE	6	--	--	2U	2U	--	2U	2U	2UJ	2U	2U	2U	2U	2U	
Arsenic	7440-38-2	ug/L	10	11	0.057	0.045	--	--	8.4J-(11.34)	1.7J-(2.295)	340.2	1.1J-	1.6J-	1UJ	1U	1U	1U	1U	1U	
Barium	7440-39-3	ug/L	2000	2600	NE	2900	--	--	110J-(137.5)	80.1J-(100.125)	412.5	355J-	356J-	281J	160J-	128J-	84.7J-	92J-	57.5J-	
Beryllium	7440-41-7	ug/L	4	73	NE	16	--	--	1U	1U	--	1U	1U	1UJ	1U	1U	1U	1U	1U	
Cadmium	7440-43-9	ug/L	5	18	NE	6.9	--	--	1U	1U	--	1U	1U	1UJ	1U	1U	1U	1U	1U	
Calcium	7440-70-2	ug/L	NE	NE	NE	NE	--	--	46500J-(57660)	58100J-(72044)	216132	51300J-	39900J-	45800J	34600J-	68700J-	62300J-	53400J-	53600J-	
Chromium	7440-47-3	ug/L	100	110	NE	NE	--	--	4.7J-(6.11)	2U	18.33	2U	2U	2UJ	2U	2U	2U	2U	2U	
Cobalt	7440-48-4	ug/L	NE	NE	NE	4.7	--	--	2.2J-(10.40)	1U	31.2	1U	1.2J-	1UJ	1U	1U	1U	1U	1U	
Copper	7440-50-8	ug/L	1300	NE	NE	620	--	--	9.5J-(11.875)	2U	36.63	35.1J-	6.2J-	2UJ	2J-	9.2J-	3J-	2U	4.2J-	
Cyanide	57-12-5	ug/L	200	730	NE	1.4	--	--	5.7J-(7.752)	13.8J-(18.77)	56.31	10UJ	17.8J-	59.6J-	9.1J-	10UJ	10UJ	10UJ	18.5J-	111
Iron	7439-89-6	ug/L	NE	NE	NE	11000	--	--	6260J-(7938)	913J-(1160)	23814	5710J-	37800J-	340J	200U	449J-	323J-	264J-	1020J-	307J-
Lead	7439-92-1	ug/L	15	NE	NE	NE	--	--	7J-(9.17)	1U	27.51	1.9J-	51J-	1UJ	1U	1U	1U	1U	1U	
Magnesium	7439-95-4	ug/L	NE	NE	NE	NE	--	--	14900J-(18476)	14400J-(17856)	55428	19300J-	21200J-	14100J	10000J-	32100J-	17000J-	17100J-	15000J-	18600J-
Manganese	7439-96-5	ug/L	NE	5100	NE	320	--	--	129J-(165.12)	22.4J-(28.672)	495.36	164J-	279J-	1UJ	1U	1.8J-	1.1J-	1U	22.6J-	293J-
Mercury	7439-97-6	ug/L	2	11	NE	0.63	--	--	0.2U	0.2U	--	0.2U								
Nickel	7440-02-0	ug/L	NE	730	NE	300	--	--	6J-(7.74)	1.5U	23.22	4.7J-	2.7J-	1UJ	1U	1U	1U	1U	1U	
Potassium	7440-09-7	ug/L	NE	NE	NE	NE	--	--	1390J-(1724)	692J-(789)	5172	1120J-	1170J-	805	519J-	2080J-	881J-	1160J-	801J-	991J-
Selenium	7782-49-2	ug/L	50	180	NE	78	--	--	5U	5U	--	5U								
Silver	7440-22-4	ug/L	NE	180	NE	71	--	--	1U	1U	--	1U								
Sodium	7440-23-5	ug/L	NE	NE	NE	NE	--	--	3950U	4020J-(5065)	15195	6130J-	4020J-	12300	3080U	4520J-	2880U	3220U	6210J-	3460U
Thallium	7440-28-0	ug/L	0.5	NE	NE	0.16	--	--	1U	1U	--	1U								
Vanadium	7440-62-2	ug/L	NE	260	NE	63	--	--	4.1U	0.64U	--	5U	5U	SUJ	5U	SU	5U	0.22U	SU	
Zinc	7440-65-6	ug/L	NE	11000	NE	4700	--	--	58.7J-(75.72)	3.9U	227.16	151J-	5070J-	46.9J	24J-	77.2J-	22.6J-	12J-	1.9U	9.3J-

Notes:

Bold The analyte was detected above the method detection limit**Bold** The analyte concentration exceeds 3X background and is significant to the Site

J The associated value is an estimated quantity.

- Result is biased low

NE None Established

R The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

ug/L microgram(s) per liter

00,

CRSC Cancer Risk Screening Concentration

EPA United States Environmental Protection Agency

MCL Maximum Contaminant Level

MCLG Maximum Contaminant Level Goal

RDSC Reference Dose Screening Concentration

SCDM Superfund Chemical Data Matrix

Table E30

Ground Water Dissolved Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS NO.	Units	SCDM	SCDM RDSC	SCDM CRSC	EPA	Montana Human Health	Location Sample ID	Background Wells		Three Times Background Concentration	On-Site Wells				Residential Wells				
									MW-01 CF-GW-MW-01 9/26/2013	MW-01 CF-GW-MW-18 9/26/2013		MW-08 CF-GW-MW-08 9/24/2013	MW-09 CF-GW-MW-09 9/24/2013	MW-10 CF-GW-MW-10 9/25/2013	MW-11 CF-GW-MW-11 9/25/2013	MW-12 CF-GW-MW-12 9/26/2013	MW-13 CF-GW-MW-13 9/26/2013	MW-14 CF-GW-MW-14 9/26/2013	MW-15 CF-GW-MW-15 9/26/2013	GW-OP-02 CF-GW-OP-02 10/1/2013
Metals, Dissolved																				
Aluminum	7429-90-5	ug/L	NE	NE	NE	16000	NE	--	8.4J (10.85)	20U	32.55	20U	20U	20U	20U	20U	20U	265	20U	
Antimony	7440-36-0	ug/L	6	15	NE	6	6	--	2U	2U	--	2U								
Arsenic	7440-38-2	ug/L	10	11	0.057	0.045	10	--	1U	1U	--	1U								
Barium	7440-39-3	ug/L	2000	2600	NE	2900	1000	--	68.9	70.2	210.6	313	349	270	158	118	79.3	91.1	52.2	
Beryllium	7440-41-7	ug/L	4	73	NE	16	4	--	1U	1U	--	1U								
Cadmium	7440-43-9	ug/L	5	18	NE	6.9	5	--	1U	1U	--	1U								
Calcium	7440-70-2	ug/L	NE	NE	NE	NE	NE	--	56000	58200	174600	50100	41300	48100	34000	65400	57500	52800	50400	67100
Chromium	7440-47-3	ug/L	100	110	NE	NE	100	--	2U	2U	--	2U								
Cobalt	7440-48-4	ug/L	NE	NE	NE	4.7	NE	--	1U	1U	--	1U								
Copper	7440-50-8	ug/L	1300	NE	NE	620	1300	--	2U	2U	--	2U	2U	2U	2U	2U	2U	3.2	2U	
Iron	7439-89-6	ug/L	NE	NE	NE	11000	NE	--	301	261	903	337	336	277	200U	294	320	313	724	292
Lead	7439-92-1	ug/L	15	NE	NE	NE	15	--	1U	1U	--	1U								
Magnesium	7439-95-4	ug/L	NE	NE	NE	NE	NE	--	13000	13300	39900	18000	20900	15500	9810	29600	15600	16500	14000	18100
Manganese	7439-96-5	ug/L	NE	5100	NE	320	NE	--	10.9	11	33	109	181	1U	1U	2	1.5	1.1U	7.2	295
Mercury	7439-97-6	ug/L	2	11	NE	0.63	2	--	0.2U	0.2U	--	0.2U								
Nickel	7440-02-0	ug/L	NE	730	NE	300	100	--	0.87J {1.122}	1U	3.366	2.1	1U	1U	1U	1	1U	0.71J	1U	1U
Potassium	7440-09-7	ug/L	NE	NE	NE	NE	NE	--	522	530	1590	884	951	810	511	1980	820	1140	732	1000
Selenium	7782-49-2	ug/L	50	180	NE	NE	50	--	5U	5U	--	5U								
Silver	7440-22-4	ug/L	NE	180	NE	71	100	--	1U	1U	--	1U								
Sodium	7440-23-5	ug/L	NE	NE	NE	NE	NE	--	3770J	3840	11520	6150	3680	12900	3000U	4310	2670U	3230J	5900	3410J
Thallium	7440-28-0	ug/L	0.5	NE	NE	NE	2	--	1U	1U	--	1U								
Vanadium	7440-62-2	ug/L	NE	260	NE	63	NE	--	5U	5U	--	5U								
Zinc	7440-66-6	ug/L	NE	11000	NE	4700	2000	--	2U	2UJ	--	31.5J	17.2J	45.1J	17.2J	89J	21.6J	13.4	2UJ	10.6

Notes:

- Bold** The analyte was detected above the method detection limit
- Bold** The analyte concentration exceeds 3X background and is significant to the Site
- J The associated value is an estimated quantity.
- NE None Established
- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- ug/L microgram(s) per liter
- CRSC Cancer Risk Screening Concentration
- EPA United States Environmental Protection Agency
- MCL Maximum Contaminant Level
- MCLG Maximum Contaminant Level Goal
- RDSC Reference Dose Screening Concentration
- SCDM Superfund Chemical Data Matrix

Table E31

Ground Water General Chemistry Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	SCDM MCL/MCLG	SCDM RDSC	SCDM CRSC	EPA Tapwater	Montana Human Health	Location Sample ID Date Type	Background Wells		Three Times Background Concentration	On-Site Wells				Residential Wells			
									MW-01 CF-GW-MW-01 9/26/2013 Field Sample	MW-01 CF-GW-MW-18 9/26/2013 Field Duplicate		MW-08 CF-GW-MW-08 9/24/2013 Field Sample	MW-09 CF-GW-MW-09 9/24/2013 Field Sample	MW-10 CF-GW-MW-10 9/25/2013 Field Sample	MW-11 CF-GW-MW-11 9/25/2013 Field Sample	MW-12 CF-GW-MW-12 9/26/2013 Field Sample	MW-13 CF-GW-MW-13 9/26/2013 Field Sample	MW-14 CF-GW-MW-14 9/26/2013 Field Sample	MW-15 CF-GW-MW-15 9/26/2013 Field Sample
GENCHEM																			
Fluoride	16984-48-8	ug/L	NE	NE	NE	620	4000	--	100 J	100 J	300	800	100U	1000	400	200	100J	200	160
Nitrate/Nitrite as N	NA	ug/L	NE	NE	NE	NE	10000	--	500 U	500 U	--	200U	200U	600	500 U	900	200J	200U	--

Notes:

Bold The analyte was detected above the method detection limit

Bold The analyte concentration exceeds 3X background and is significant to the Site

J The associated value is an estimated quantity.

NE None Established

U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

ug/L microgram(s) per liter

CRSC Cancer Risk Screening Concentration

EPA United States Environmental Protection Agency

MCL Maximum Contaminant Level

MCLG Maximum Contaminant Level Goal

RDSC Reference Dose Screening Concentration

SCDM Superfund Chemical Data Matrix

Table E34

Surface Water PAHs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS No.	Units	Cedar Creek							Flathead River														
			SCDM	SCDM	Montana Aquatic Life	Montana Aquatic Life	Location	Sample ID	Date	Background Sample	Cedar Creek Sample	Background Samples						Three Times Background	Flathead River Samples					
										SW-01 CF-SW-01 9/27/2013 Field Sample	SW-03 CF-SW-03 9/30/2013 Field Sample	SW-13 CF-SW-13 9/27/2013 Field Sample	SW-14 CF-SW-14 9/27/2013 Field Sample	SW-15 CF-SW-15 9/27/2013 Field Sample	SW-16 CF-SW-16 9/27/2013 Field Sample	SW-16 CF-SW-24 9/27/2013 Field Duplicate	SW-05 CF-SW-05 9/25/2013 Field Sample	SW-06 CF-SW-06 9/25/2013 Field Sample	SW-07 CF-SW-07 9/25/2013 Field Sample	SW-07 CF-SW-23 9/25/2013 Field Sample	SW-08 CF-SW-08 9/25/2013 Field Sample	SW-09 CF-SW-09 9/26/2013 Field Sample		
SVOC SIM																								
2-Methylnaphthalene	91-57-6	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Acenaphthene	83-32-9	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Acenaphthylene	208-96-8	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Anthracene	120-12-7	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Benzo(a)anthracene	56-55-3	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Benzo(a)pyrene	50-32-8	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Benzo(b)fluoranthene	205-99-2	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Benzo(g,h,i)perylene	191-24-2	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Benzo(k)fluoranthene	207-08-9	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Chrysene	218-01-9	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Dibenzo(a,h)anthracene	53-70-3	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Fluoranthene	206-44-0	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Fluorene	86-73-7	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Naphthalene	91-20-3	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.11	0.33	0.1U	0.1U	0.1U	0.1U	0.24U		
Pentachlorophenol	87-86-5	ug/L	19	15	5.3	4	--	0.21R	0.2R	0.2R	0.21R	0.2R	0.2R	0.2R	0.21R	--	0.2R	0.2R	0.2R	0.2R	0.2R	0.2R		
Phenanthrene	85-01-8	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		
Pyrene	129-00-0	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U		

Notes:

- Bold** The analyte was detected above the method detection limit
NE None Established
R The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
ug/L microgram(s) per liter
SCDM Superfund Chemical Data Matrix



Table E35

Surface Water Pesticides Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	SCDM Acute	SCDM Chronic	Montana Aquatic Life Acute	Montana Aquatic Life Chronic	Location Sample ID	Cedar Creek		Flathead River											
								Background Sample	Cedar Creek Sample	Background Samples						Flathead River Samples					
										SW-03 CF-SW-01 9/27/2013 Field Sample	SW-13 CF-SW-13 9/30/2013 Field Sample	SW-14 CF-SW-14 9/27/2013 Field Sample	SW-15 CF-SW-15 9/27/2013 Field Sample	SW-16 CF-SW-16 9/27/2013 Field Sample	SW-16 CF-SW-24 9/27/2013 Field Duplicate	SW-05 CF-SW-05 9/25/2013 Field Sample	SW-06 CF-SW-06 9/25/2013 Field Sample	SW-07 CF-SW-07 9/25/2013 Field Sample	SW-07 CF-SW-23 9/25/2013 Field Duplicate	SW-08 CF-SW-08 9/25/2013 Field Sample	SW-09 CF-SW-09 9/26/2013 Field Sample
Pesticides																					
4,4'-DDD	72-54-8	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	
4,4'-DDE	72-55-9	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	
4,4'-DDT	50-29-3	ug/L	1.1	0.001	1.1	0.001	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	
ALDRIN	309-00-2	ug/L	3	NE	1.5	NE	--	0.052U	0.05U	0.052U	0.051U	0.05U	0.051U	0.051U	0.052U	0.051U	0.052U	0.051U	0.051U	0.051U	
ALPHA-BHC	319-84-6	ug/L	NE	NE	NE	NE	--	0.052U	0.052U	0.05U	0.052U	0.051U	0.05U	0.051U	0.052U	0.051U	0.052U	0.051U	0.051U	0.051U	
ALPHA-CHLORDANE	5103-71-9	ug/L	NE	NE	NE	NE	--	0.052U	0.052U	0.05U	0.052U	0.051U	0.05U	0.051U	0.052U	0.051U	0.052U	0.051U	0.051U	0.051U	
BETA-BHC	319-85-7	ug/L	NE	NE	NE	NE	--	0.052U	0.052U	0.05U	0.052U	0.051U	0.05U	0.051U	0.052U	0.051U	0.052U	0.051U	0.051U	0.051U	
DELTA-BHC	319-86-8	ug/L	NE	NE	NE	NE	--	0.052U	0.052U	0.05U	0.052U	0.051U	0.05U	0.051U	0.052U	0.051U	0.052U	0.051U	0.051U	0.051U	
DIELDRIN	60-57-1	ug/L	0.24	0.056	0.24	0.056	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	
ENDOSULFAN I	959-98-8	ug/L	0.22	0.056	0.22	0.056	--	0.052U	0.052U	0.05U	0.052U	0.051U	0.05U	0.051U	0.052U	0.051U	0.052U	0.051U	0.051U	0.051U	
ENDOSULFAN II	33213-65-9	ug/L	0.22	0.056	0.22	0.056	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	
ENDOSULFAN SULFATE	1031-07-8	ug/L	NE	0.22	0.056	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	
ENDRIN	72-20-8	ug/L	0.086	0.036	0.086	0.0036	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	
ENDRIN ALDEHYDE	7421-93-4	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	
ENDRIN KETONE	53494-70-5	ug/L	NE	NE	NE	NE	--	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	
GAMMA-BHC (LINDANE)	58-89-9	ug/L	NE	NE	0.95	NE	--	0.052U	0.052U	0.05U	0.052U	0.051U	0.05U	0.051U	0.052U	0.051U	0.052U	0.051U	0.051U	0.051U	
GAMMA-CHLORDANE	5103-74-2	ug/L	NE	NE	NE	NE	--	0.052U	0.052U	0.05U	0.052U	0.051U	0.05U	0.051U	0.052U	0.051U	0.052U	0.051U	0.051U	0.051U	
HEPTACHLOR	76-44-8	ug/L	0.52	0.0038	0.52	0.0038	--	0.052U	0.052U	0.05U	0.052U	0.051U	0.05U	0.051U	0.052U	0.051U	0.052U	0.051U	0.051U	0.051U	
HEPTACHLOR EPoxide	1024-57-3	ug/L	0.52	0.0038	0.26	0.0038	--	0.052U	0.052U	0.05U	0.052U	0.051U	0.05U	0.051U	0.052U	0.051U	0.052U	0.051U	0.051U	0.051U	
METHOXYCHLOR	72-43-5	ug/L	NE	0.03	NE	0.03	--	0.52U	0.52U	0.5U	0.52U	0.51U	0.5U	0.51U	0.52U	0.51U	0.52U	0.51U	0.52U	0.51U	
TOXAPHENE	8001-35-2	ug/L	0.73	0.0002	0.73	0.0002	--	5.2U	5.2U	5U	5.2U	5.1U	5U	5.1U	5.2U	5.1U	5.2U	5.1U	5.2U	5.1U	

Notes:

NE None Established

The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.

U microgram(s) per liter

ug/L Superfund Chemical Data Matrix

Table E36

Surface Water PCBs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	SCDM Acute	SCDM Chronic	Montana Aquatic Life Acute	Montana Aquatic Life Chronic	Location	Cedar Creek		Flathead River											
								Background Sample	Cedar Creek Sample	Background Samples						Flathead River Samples					
								SW-01 CF-SW-01 9/27/2013 Field Sample	SW-03 CF-SW-03 9/30/2013 Field Sample	SW-13 CF-SW-13 9/27/2013 Field Sample	SW-14 CF-SW-14 9/27/2013 Field Sample	SW-15 CF-SW-15 9/27/2013 Field Sample	SW-16 CF-SW-16 9/27/2013 Field Sample	SW-16 CF-SW-24 9/27/2013 Field Duplicate	SW-05 CF-SW-05 9/25/2013 Field Sample	SW-06 CF-SW-06 9/25/2013 Field Sample	SW-07 CF-SW-07 9/25/2013 Field Sample	SW-07 CF-SW-23 9/25/2013 Field Duplicate	SW-08 CF-SW-08 9/25/2013 Field Sample	SW-09 CF-SW-09 9/26/2013 Field Sample	
PCBs																					
Aroclor-1016	12674-11-2	ug/L	NE	NE	NE	0.014	--	1UJ	1U	1UJ	1UJ	1UJ	1UJ	1UJ							
Aroclor-1221	11104-28-2	ug/L	NE	NE	NE	0.014	--	1UJ	1U	1UJ	1UJ	1UJ	1UJ	1UJ							
Aroclor-1232	11141-16-5	ug/L	NE	NE	NE	0.014	--	1UJ	1U	1UJ	1UJ	1UJ	1UJ	1UJ							
Aroclor-1242	53469-21-9	ug/L	NE	NE	NE	0.014	--	1UJ	1U	1UJ	1UJ	1UJ	1UJ	1UJ							
Aroclor-1248	12672-29-6	ug/L	NE	NE	NE	0.014	--	1UJ	1U	1UJ	1UJ	1UJ	1UJ	1UJ							
Aroclor-1254	11097-69-1	ug/L	NE	NE	NE	0.014	--	1UJ	1U	1UJ	1UJ	1UJ	1UJ	1UJ							
Aroclor-1260	11096-82-5	ug/L	NE	NE	NE	0.014	--	1UJ	1U	1UJ	1UJ	1UJ	1UJ	1UJ							
Aroclor-1262	37324-23-5	ug/L	NE	NE	NE	NE	--	1UJ	1U	1UJ	1UJ	1UJ	1UJ	1UJ							
Aroclor-1268	11100-14-4	ug/L	NE	NE	NE	NE	--	1UJ	1U	1UJ	1UJ	1UJ	1UJ	1UJ							

Notes:

NE None Established

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.

UJ The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

ug/L microgram(s) per liter

SCDM Superfund Chemical Data Matrix



Table E38

Surface Water Dissolved Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	SCDM	SCDM	Montana Aquatic Life	Montana Aquatic Life	Location Sample ID	Cedar Creek			Flathead River											
								Background Sample	Cedar Creek Sample	Background Samples						Background	Flathead River Samples					
										SW-01 CF-SW-01 9/27/2013	SW-03 CF-SW-03 9/30/2013	SW-13 CF-SW-13 9/27/2013	SW-14 CF-SW-14 9/27/2013	SW-15 CF-SW-15 9/27/2013	SW-16 CF-SW-16 9/27/2013	SW-16 CF-SW-24 9/27/2013	SW-05 CF-SW-05 9/25/2013	SW-06 CF-SW-06 9/25/2013	SW-07 CF-SW-07 9/25/2013	SW-07 CF-SW-23 9/25/2013	SW-08 CF-SW-08 9/25/2013	SW-09 CF-SW-09 9/26/2013
Metals, Dissolved																						
Aluminum	7429-90-5	ug/L	750	87	750	87	--	20U	--	20U	20U	10J (13)	20U	9.3J (12.1)	9.4J (12.22)	39	20U	20U	20U	20U	7.1J	5.6J
Antimony	7440-36-0	ug/L	NE	NE	NE	NE	--	2U	--	2U	2U	2U	2U	2U	2U	--	2U	2U	2U	2U	2U	2U
Arsenic	7440-38-2	ug/L	340	150	340	150	--	1U	--	1U	1U	1U	1U	1U	1U	--	1U	1U	1U	1U	1U	1U
Barium	7440-39-3	ug/L	NE	NE	NE	NE	--	89.1	267.3	100	151	82.4	105	80.5	81.2	453	98.4	96.7	113	113	95.5	92.5
Beryllium	7440-41-7	ug/L	NE	NE	NE	NE	--	1U	--	1U	1U	1U	1U	1U	1U	--	1U	1U	1U	1U	1U	1U
Cadmium	7440-43-9	ug/L	2	0.25	0.52	0.097	--	1U	--	1U	1U	1U	1U	1U	1U	--	1U	1U	1U	1U	1U	1U
Calcium	7440-70-2	ug/L	NE	NE	NE	NE	--	45900	137700	52000	35200	19700	27600	19200	19300	105600	24200	24400	31800	31700	24300	23500
Chromium	7440-47-3	ug/L	NE	NE	NE	NE	--	2U	--	2U	2U	2U	2U	2U	2U	--	2U	2U	2U	2U	2U	2U
Cobalt	7440-48-4	ug/L	NE	NE	NE	NE	--	1U	--	1U	1U	1U	1U	1U	1U	--	1U	1U	1U	1U	1U	1U
Copper	7440-50-8	ug/L	13	9	3.79	2.85	--	2U	--	2U	2U	2U	2U	2U	2U	--	2U	2U	2U	2U	2U	2U
Iron	7439-89-6	ug/L	NE	1000	NE	1000	--	202	606	230	200U	200U	200U	200U	200U	--	200U	200U	200U	200U	200U	200U
Lead	7439-92-1	ug/L	65	2.5	13.98	0.545	--	1U	--	1U	1U	1U	1U	1U	1U	--	1U	1U	1U	1U	1U	1U
Magnesium	7439-95-4	ug/L	NE	NE	NE	NE	--	12800	38400	13600	7830	4800	7020	4680	4680	23490	6130	6080	8200	8120	6020	5770
Manganese	7439-96-5	ug/L	NE	NE	NE	NE	--	6.1	18.3	3.8	2.2	1.2	1U	1U	1U	6.6	1.8	1U	31.4	30.7	1U	1U
Mercury	7439-97-6	ug/L	1.4	0.77	1.7	0.91	--	0.2U	--	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	--	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U
Nickel	7440-02-0	ug/L	470	52	145	16.1	--	1U	--	1U	0.55J (0.709)	0.33J (0.426)	0.36J (0.464)	0.3J	0.27J (0.348)	2.127	1U	1U	1U	1U	0.36J	0.34J
Potassium	7440-09-7	ug/L	NE	NE	NE	NE	--	500U	--	625	500U	500U	500U	500U	500U	--	500U	500U	500U	500U	500U	500U
Selenium	7782-49-2	ug/L	NE	5	20	5	--	5U	--	5U	5U	5U	5U	5U	5U	--	5U	5U	5U	5U	5U	5U
Silver	7440-22-4	ug/L	3.2	NE	0.374	NE	--	1U	--	1U	1U	1U	1U	1U	1U	--	1U	1U	1U	1U	1U	1U
Sodium	7440-23-5	ug/L	NE	NE	NE	NE	--	2880	8640	2930J	1150J (1449)	517J (651)	1030J (1298)	501J (631.3)	500UJ	4347	985	860	6940	6780	828J	752J
Thallium	7440-28-0	ug/L	NE	NE	NE	NE	--	1U	--	1U	1U	1U	1U	1U	1U	--	1U	1U	1U	1U	1U	1U
Vanadium	7440-62-2	ug/L	NE	NE	NE	NE	--	5U	--	5U	5U	5U	5U	5U	5U	--	5U	5U	5U	5U	5U	5U
Zinc	7440-66-6	ug/L	120	120	37	37	--	2UJ	--	2U	2U	2U	2U	2U	2U	--	2.7J	2UJ	2J	2UJ	2U	2.1J

Notes:

Bold: The analyte was detected above the method detection limit
Bold: The analyte concentration exceeds 3X background and is significant to the Site

J: The associated value is an estimated quantity.

NE: None Established

U: The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

ug/L: microgram(s) per liter

SCDM: Superfund Chemical Data Matrix

Table E39

Surface Water General Chemistry Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO.	Units	Cedar Creek							Flathead River											
			Background Sample	Cedar Creek Sample	Background Samples						Three Times	Flathead River Samples									
					SW-01 CF-SW-01 9/27/2013	SW-03 CF-SW-03 9/30/2013	SW-13 CF-SW-13 9/27/2013	SW-14 CF-SW-14 9/27/2013	SW-15 CF-SW-15 9/27/2013	SW-16 CF-SW-16 9/27/2013	SW-16 CF-SW-24 9/27/2013	SW-05 CF-SW-05 9/25/2013	SW-06 CF-SW-06 9/25/2013	SW-07 CF-SW-07 9/25/2013	SW-07 CF-SW-23 9/25/2013	SW-08 CF-SW-08 9/25/2013	SW-09 CF-SW-09 9/26/2013				
GENCHEM																					
Fluoride	16984-48-8	ug/L	NE	NE	NE	NE	--	100U	100U	100U	100U	100U	100U	110	330	100U	100U	500	500	100U	100U
Nitrate/Nitrite as N	NA	ug/L	NE	NE	NE	NE	--	--	--	--	--	--	--	--	--	200J	200U	400 J	500	200U	200U

Notes:

Bold The analyte was detected above the method detection limit

Bold The analyte concentration exceeds 3X background and is significant to the Site

-- Not Analyzed

J The associated value is an estimated quantity

NE None Established

U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

ug/L microgram(s) per liter

SCDM Superfund Chemical Data Matrix



Table E41

Sediment SVOCs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO.	Units	Location Sample ID Date Type	Cedar Creek		Cedar Creek Reservoir Overflow Drainage				Flathead River											
				Background Sample	Cedar Creek Sample	Background Sample	Overflow Drainage Samples			Background Samples						Flathead River Samples					
				SD-01 CF-SD-01 9/27/2013 Trip Blank	SD-03 CF-SD-03 9/30/2013 Field Sample	SD-02 CF-SD-02 9/27/2013 Field Sample	SD-04 CF-SD-04 9/24/2013 Field Sample	SD-26 CF-SD-01 9/24/2013 Field Sample	SD-13 CF-SD-13 9/27/2013 Field Sample	SD-14 CF-SD-14 9/27/2013 Field Sample	SD-15 CF-SD-15 9/27/2013 Field Sample	SD-16 CF-SD-16 9/27/2013 Field Sample	SD-16 CF-SD-24 9/27/2013 Field Sample Duplicate	SD-05 CF-SD-05 9/25/2013 Field Sample	SD-06 CF-SD-06 9/25/2013 Field Sample	SD-07 CF-SD-07 9/25/2013 Field Sample Duplicate	SD-07 CF-SD-23 9/25/2013 Field Sample	SD-08 CF-SD-08 9/25/2013 Field Sample	SD-09 CF-SD-09 9/26/2013 Field Sample		
SVOCs																					
1,1'-Biphenyl	92-52-4	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
1,2,4,5-Tetrachlorobenzene	95-94-3	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
2,2'-Oxybis(1-chloropropane)	108-60-1	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
2,3,4,6-Tetrachlorophenol	58-90-2	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
2,4,5-Trichlorophenol	95-95-4	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
2,4,6-Trichlorophenol	88-06-2	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
2,4-Dichlorophenol	120-83-2	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
2,4-Dimethylphenol	105-67-9	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2R	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
2,4-Dinitrophenol	51-28-5	mg/kg	--	0.87U	0.75R	0.4U	0.41U	0.36U	0.37U	0.38U	0.42U	0.37U	0.4U	0.43U	0.38U	0.46U	0.47U	0.44U	0.45U		
2,4-Dinitrotoluene	121-14-2	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
2-Chloronaphthalene	91-58-7	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
2-Chlorophenol	95-57-8	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
2-Methylnaphthalene	91-57-6	mg/kg	--	0.45R	0.39R	0.21R	0.21R	0.19R	0.19R	0.22R	0.19R	0.22R	0.2R	0.22R	0.19R	0.24R	0.24R	0.23R	0.23R		
2-Methylphenol	95-48-7	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2R	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
2-Nitroaniline	88-74-4	mg/kg	--	0.87U	0.75R	0.4U	0.41U	0.36U	0.37U	0.38U	0.42U	0.37U	0.4U	0.43U	0.38U	0.46U	0.47U	0.44U	0.45U		
2-Nitrophenol	88-75-5	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
3,3'-Dichlorobenzidine	91-94-1	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
3-Nitroaniline	99-09-2	mg/kg	--	0.87U	0.75R	0.4U	0.41U	0.36U	0.37U	0.38U	0.42U	0.37U	0.4U	0.43U	0.38U	0.46U	0.47U	0.44U	0.45U		
4,6-Dinitro-2-methylphenol	534-52-1	mg/kg	--	0.87U	0.75R	0.4U	0.41U	0.36U	0.37U	0.38U	0.42U	0.37U	0.4U	0.43U	0.38U	0.46U	0.47U	0.44U	0.45U		
4-Bromophenyl-phenylether	101-55-3	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
4-Chloro-3-methylphenol	59-50-7	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
4-Chloroaniline	106-47-8	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
4-Chlorophenyl-phenylether	7005-72-3	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
4-Methylphenol	106-44-5	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2R	0.22U	0.19U	0.24U	0.24U	0.23U	0.23U		
4-Nitroaniline	100-01-6	mg/kg	--	0.87U	0.75R	0.4U	0.41U	0.36U	0.37U	0.38U	0.42U	0.37U	0.4U	0.43U	0.38U	0.46U	0.47U	0.44U	0.45U		
4-Nitrophenol	100-02-7	mg/kg	--	0.87U	0.75R	0.4U	0.41U	0.36U	0.37U	0.38U	0.42U	0.37U	0.4U	0.43U	0.38U	0.46U	0.47U	0.44U	0.45U		
Acenaphthene	83-32-9	mg/kg	--	0.45R	0.39R	0.21R	0.21R	0.19R	0.19R	0.22R	0.19R	0.22R	0.2R	0.22R	0.19R	0.24R	0.24R	0.23R	0.23R		
Acenaphthylene	208-96-8	mg/kg	--	0.21R	0.39R	0.21R	0.21R	0.19R	0.19R	0.22R	0.19R	0.22R	0.2R	0.22R	0.19R	0.24R	0.24R	0.23R	0.23R		
Acetophenone	98-86-2	mg/kg	--	0.45U	0.39R	0.21U	0.21U	0.19U	0.19U	0.22U	0.19U	0.22U	0.2U	0.22U	0.19U	0					

Table E44

Sediment PCBs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO.	Units	Location Sample ID Date Type	Cedar Creek		Cedar Creek Reservoir Overflow Drainage				Flathead River											
				Background Sample	Cedar Creek Sample	Background Sample	Overflow Drainage Samples			Background Samples						Flathead River Samples					
				SD-01 CF-SD-01 9/27/2013 Trip Blank	SD-03 CF-SD-03 9/30/2013 Field Sample	SD-02 CF-SD-02 9/27/2013 Field Sample	SD-04 CF-SD-04 9/24/2013 Field Sample	SD-26 CF-SD-OP-01 9/24/2013 Field Sample	SD-13 CF-SD-13 9/27/2013 Field Sample	SD-14 CF-SD-14 9/27/2013 Field Sample	SD-15 CF-SD-15 9/27/2013 Field Sample	SD-16 CF-SD-16 9/27/2013 Field Sample	SD-16 CF-SD-24 9/27/2013 Field Duplicate	SD-05 CF-SD-05 9/25/2013 Field Sample	SD-06 CF-SD-06 9/25/2013 Field Sample	SD-07 CF-SD-07 9/25/2013 Field Sample	SD-07 CF-SD-23 9/25/2013 Field Duplicate	SD-08 CF-SD-08 9/25/2013 Field Sample	SD-09 CF-SD-09 9/26/2013 Field Sample		
PCBs																					
Aroclor-1016	12674-11-2	mg/kg	--	0.087U	0.075U	0.041U	0.04U	0.036U	0.037U	0.038U	0.042U	0.037U	0.04U	0.043U	0.038U	0.046U	0.047U	0.043U	0.045U		
Aroclor-1221	11104-28-2	mg/kg	--	0.087U	0.075U	0.041U	0.04U	0.036U	0.037U	0.038U	0.042U	0.037U	0.04U	0.043U	0.038U	0.046U	0.047U	0.043U	0.045U		
Aroclor-1232	11141-16-5	mg/kg	--	0.087U	0.075U	0.041U	0.04U	0.036U	0.037U	0.038U	0.042U	0.037U	0.04U	0.043U	0.038U	0.046U	0.047U	0.043U	0.045U		
Aroclor-1242	53469-21-9	mg/kg	--	0.087U	0.075U	0.041U	0.04U	0.036U	0.037U	0.038U	0.042U	0.037U	0.04U	0.043U	0.038U	0.046U	0.047U	0.043U	0.045U		
Aroclor-1248	12672-29-6	mg/kg	--	0.087U	0.075U	0.041U	0.04U	0.036U	0.037U	0.038U	0.042U	0.037U	0.04U	0.043U	0.038U	0.046U	0.047U	0.043U	0.045U		
Aroclor-1254	11097-69-1	mg/kg	--	0.087UJ	0.075U	0.041UJ	0.04U	0.036UJ	0.037UJ	0.038UJ	0.042UJ	0.037UJ	0.04UJ	0.043U	0.038U	0.046U	0.047UJ	0.043U	0.045U		
Aroclor-1260	11096-82-5	mg/kg	--	0.087U	0.075U	0.041U	0.04U	0.036U	0.037U	0.038U	0.042U	0.037U	0.04U	0.043U	0.038U	0.046U	0.047U	0.043U	0.045U		
Aroclor-1262	37324-23-5	mg/kg	--	0.087U	0.075U	0.041U	0.04U	0.036U	0.037U	0.038U	0.042U	0.037U	0.04U	0.043U	0.038U	0.046U	0.047U	0.043U	0.045U		
Aroclor-1268	11100-14-4	mg/kg	--	0.087U	0.075U	0.041U	0.04U	0.036U	0.037U	0.038U	0.042U	0.037U	0.04U	0.043U	0.038U	0.046U	0.047U	0.043U	0.045U		

Notes:

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.

UJ The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

ug/kg micigram(s) per kilogram



Table E45

Sediment TAL Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS NO	Units	Location	Sample ID	Cedar Creek				Cedar Creek Reservoir Overflow Drainage								Flathead River																
					Background Sample		Cedar Creek Sample		Background Sample		Overflow Drainage Samples		Background Samples								Flathead River Samples												
					SD-01	CF-SD-01	SD-03	CF-SD-03	SD-02	CF-SD-02	SD-04	CF-SD-04	SD-26	CF-SD-13	SD-14	CF-SD-14	SD-15	CF-SD-15	SD-16	CF-SD-16	SD-16	CF-SD-24	Three Times Background	SD-05	CF-SD-05	SD-06	CF-SD-06	SD-07	CF-SD-07	SD-08	CF-SD-08	SD-09	CF-SD-09
					9/27/2013	Trip Blank	9/30/2013	Background	9/27/2013	Field Sample	9/24/2013	Field Sample	9/24/2013	Field Sample	9/27/2013	Field Sample	9/27/2013	Field Sample	9/27/2013	Field Sample	9/25/2013	Field Sample	9/25/2013	Field Sample	9/25/2013	Field Sample	9/25/2013	Field Sample	9/26/2013	Field Sample			
Metals																																	
Aluminum	7429-90-5	mg/kg	--		11900	35700	13500	22000	66000	18900	11200	6970	6760	8440	9880	10500	31500	5310	4730	8120	9740	8960	9910										
Antimony	7440-36-0	mg/kg	--		13.1U	--	15.3U	7.2U	--	6.8UJ	6.5UJ	5.4UJ	5.1UJ	6.7UJ	7.1UJ	6.4UJ	--	5.6UJ	6.6UJ	7UJ	8.5UJ	6.9UJ	6.1UJ										
Arsenic	7440-38-2	mg/kg	--		3.8	11.4	5.1	19.5	58.5	7	5.5	3.6	3	5	5.6	6.2	18.6	2.4	2.9	5.5	5	4.8	5.1										
Barium	7440-39-3	mg/kg	--		176	528	223J	432	1296	261	110	52.6	42.9	92.7	99.6	134	402	45.5	42.8	133	132	79	98.1										
Beryllium	7440-41-7	mg/kg	--		1.1U	--	1.3U	1	3	0.72	0.55	0.45U	0.42U	0.56U	0.59U	0.56	1.68	0.47U	0.55U	0.58U	0.71U	0.57U	0.56										
Cadmium	7440-43-9	mg/kg	--		1.1U	--	1.3U	0.6U	--	0.56U	0.54U	0.45U	0.42U	0.56U	0.59U	0.53U	--	0.47U	0.55U	0.58U	0.71U	0.57U	0.51U										
Calcium	7440-70-2	mg/kg	--		26300	78900	10200J	19400	58200	4540	10200	7390	8670	18100	3300	2650	26010	5330	30500	23900	25000	8070	12600										
Chromium	7440-47-3	mg/kg	--		9.6	28.8	11.3	18.8	56.4	13.4	11.1	7.1	7.7	9.9	12.3	10.7	36.9	6.8	5.8	10.1	11.6	11	11.9										
Cobalt	7440-48-4	mg/kg	--		10.9U	--	12.7U	13.3	39.9	6.6	6.2	4.5U	4.5	5.6U	7	6.4	21	4.7U	5.5U	5.8U	7.1U	5.7U	6.2										
Copper	7440-50-8	mg/kg	--		19	57	14	36.4	109.2	17.7	16.4	7	8.9	11.8	16.1	13.6	48.3	5.7	7.9	12.4	13.2	11.3	12.4										
Cyanide	57-12-5	mg/kg	--		0.34J (0.53)	1.59	1.3U	0.66UJ	--	0.63UJ	0.56UJ	0.55UJ	0.61UJ	0.63UJ	0.62UJ	0.57UJ	--	0.61UJ	0.59UJ	1.8J	1.7J	0.69UJ	0.72UJ										
Iron	7439-89-6	mg/kg	--		11600	34800	15500	29800	89400	14900	16800	14200	12500	15200	17200	15300	51600	9690	8530	14700	15600	17400	18300										
Lead	7439-92-1	mg/kg	--		10.4J- (14.98)	44.94	9.8J-	20	60	16	10.7	3.5	3.3	6.8J- (9.79)	7.3	8.2	29.37	3.4	3.6J-	8J-	7.4J-	6.8	7										
Magnesium	7439-95-4	mg/kg	--		8500	25500	8220	17600	52800	9610	10300	8220	8290	11000	9390	9090	33000	5650	6670	11400	12700	10200	11200										
Manganese	7439-96-5	mg/kg	--		257	771	448	3280	9840	239	649	336	170	258	565	727	2181	195	212	256	228	244	248										
Mercury	7439-97-6	mg/kg	--		0.047J (0.086)	0.258	0.028J	0.061J (0.112)	0.336	0.023J	0.011J	0.092U	0.003J- (0.0056)	0.011J (0.020)	0.007J- (0.013)	0.013J (0.024)	0.072	0.0026J-	0.0064J	0.016J	0.011J	0.0033J-	0.01J										
Nickel	7440-02-0	mg/kg	--		8.9	26.7	10.2U	23.8	71.4	16.4	16.4	8.9	9.5	11	12.2	12.2	36.6	7	7.1	11.2	11.4	12.4											
Potassium	7440-09-7	mg/kg	--		1680	5040	1270U	2300	6900	1460	553	528	438	834	898	1170	3510	470U	548U	842	1340	844	1110										
Selenium	7782-49-2	mg/kg	--		7.6U	--	8.9UJ	4.2U	--	3.9U	3.8U	3.1U	3U	3.9U	4.1U	3.7U	--	3.3U	3.8U	4.1U	5U	4U	3.5U										
Silver	7440-22-4	mg/kg	--		2.2U	--	2.5U	1.2U	--	1.1U	1.1U	0.9U	0.85U	1.1U	1.2U	1.1U	--	0.94U	1.1U	1.2U	1.4U	1.1U	1U										
Sodium	7440-23-5	mg/kg	--		1090U	--	1270U	597U	--	597U	541U	448U	425U	558U	588U	530U	--	470U	548U	583U	708U	573U	506U										
Thallium	7440-28-0	mg/kg	--		5.4U	--	6.4U	3U	--	2.8U	2.7U	2.2U	2.1U	2.8U	2.9U	2.7U	--	2.4U	2.7U	2.9U	3.5U	2.9U	2.5U										
Vanadium	7440-62-2	mg/kg	--		8.3J (11.12)	33.36	12.7U	18.1	54.3	12.6	8.5	9	8.1	16	20	14.5	60	10.8	6.2	14.3	17.4	25.9	26.8										
Zinc	7440-66-6	mg/kg	--		54	162	45.3	83.6	250.8	49.6	87.6	36.8	33.4	42.7	46.5	41.2	139.5	27.9	25.4	43.2	44.9	44.2	47.2										

Notes:

Table E46

Sediment General Chemistry Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	Location Sample ID Date Type	Cedar Creek		Cedar Creek Reservoir Overflow Drainage				Flathead River												
				Background Sample	Cedar Creek Sample	Background Sample	Overflow Drainage Samples		Background Samples						Background	Flathead River Samples						
					SD-01 CF-SD-01 9/27/2013	SD-03 CF-SD-03 9/30/2013	SD-02 CF-SD-02 9/27/2013	SD-04 CF-SD-04 9/24/2013	SD-26 CF-SD-01 9/24/2013	SD-13 CF-SD-13 9/27/2013	SD-14 CF-SD-14 9/27/2013	SD-15 CF-SD-15 9/27/2013	SD-16 CF-SD-16 9/27/2013	SD-16 CF-SD-24 9/27/2013		SD-05 CF-SD-05 9/25/2013	SD-06 CF-SD-06 9/25/2013	SD-07 CF-SD-07 9/25/2013	SD-07 CF-SD-23 9/25/2013	SD-08 CF-SD-08 9/25/2013	SD-09 CF-SD-09 9/26/2013	
GENCHEM																						
Fluoride	16984-48-8	mg/kg	--	5.7U	--	3.8U	2.6U	--	2.8U	2.2U	2.2U	2.3U	2.6U	2.2U	2.1U	--	2.8U	2.3U	9.5	7.9	2.8U	2.8U

Notes:

Bold The analyte was detected above the method detection limit

Bold The analyte concentration exceeds 3X background and is significant to the Site

NE None Established

U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

mg/kg milligram(s) per kilogram

CRSC Cancer Risk Screening Concentration

EPA United States Environmental Protection Agency

RDSC Reference Dose Screening Concentration

SCDM Superfund Chemical Data Matrix

Table E49

Soil PAHs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	SCDM RDSC	SCDM CRSC	EPA Industrial Soil	EPA Residential Soil	Location Sample ID	Date	Background Samples			Three Times Background Concentration
									SS-01 CF-SS-01 9/27/2013 Field Sample	SS-02 CF-SS-02 9/27/2013 Field Sample	SS-02 CF-SS-09 9/27/2013 Field Duplicate	
SVOC SIM												
2-Methylnaphthalene	91-57-6	mg/kg	0.014	NE	2200	230	--		0.0037U	0.0012J (0.012)	0.063R	0.036
Acenaphthene	83-32-9	mg/kg	0.41	NE	33000	3400	--		0.0037U	0.0064J (0.0230)	0.005J (0.0234)	0.0702
Acenaphthylene	208-96-8	mg/kg	NE	NE	NE	NE	--		0.0037U	0.044R	0.063R	--
Anthracene	120-12-7	mg/kg	4.2	NE	170000	17000	--		0.002J (0.02)	0.012J (0.12)	0.0093J (0.093)	0.36
Benzo(a)anthracene	56-55-3	mg/kg	0.01	NE	2.1	0.15	--		0.0075	0.07R	0.081R	0.0225
Benzo(a)pyrene	50-32-8	mg/kg	0.0035	0.24	0.21	0.015	--		0.01	0.08J (0.8)	0.081R	0.24
Benzo(b)fluoranthene	205-99-2	mg/kg	0.035	NE	2.1	0.15	--		0.037	0.26R	0.23R	0.111
Benzo(g,h,i)perylene	191-24-2	mg/kg	NE	NE	NE	NE	--		0.0051	0.044R	0.035J (0.35)	1.05
Benzo(k)fluoranthene	207-08-9	mg/kg	0.35	NE	21	1.5	--		0.0087	0.062J (0.62)	0.052J (0.52)	1.86
Chrysene	218-01-9	mg/kg	1.1	NE	210	15	--		0.02	0.12R	0.14R	0.06
Dibeno(a,h)anthracene	53-70-3	mg/kg	0.011	NE	0.21	0.015	--		0.0011J (0.011)	0.013J (0.13)	0.0089J (0.089)	0.39
Fluoranthene	206-44-0	mg/kg	7	NE	22000	2300	--		0.025	0.13R	0.17R	0.075
Fluorene	86-73-7	mg/kg	0.4	NE	22000	2300	--		0.001J (0.01)	0.005J (0.05)	0.0038J (0.038)	0.15
Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	0.2	NE	2.1	0.15	--		0.0076	0.066R	0.063R	0.0228
Naphthalene	91-20-3	mg/kg	0.00047	NE	18	3.6	--		0.0037U	0.0025J (0.025)	0.0017J (0.017)	0.075
Pentachlorophenol	87-86-5	mg/kg	0.00036	0.01	2.7	0.89	--		0.0075U	0.089R	0.13R	--
Phenanthrene	85-01-8	mg/kg	NE	NE	NE	NE	--		0.013	0.061R	0.079R	0.039
Pyrene	129-00-0	mg/kg	0.95	NE	17000	1700	--		0.0082J (0.0973)	0.058J (0.688)	0.057J (0.676)	2.064

Notes:

- Bold** The analyte was detected above the method detection limit
- J** The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- NE** None Established
- R** The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U** The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
- ug/kg** micigram(s) per kilogram
- CRSC** Cancer Risk Screening Concentration
- EPA** United States Environmental Protection Agency
- RDSC** Reference Dose Screening Concentration
- SCDM** Superfund Chemical Data Matrix

Soil Pesticides Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E50

Analyte	CAS.NO	Units	SCDM RDSC	SCDM CRSC	EPA Industrial Soil	EPA Residential Soil	Location Sample ID Date Type	Background Samples			Three Times Background Concneteration
								SS-01 CF-SS-01 9/27/2013 Field Sample	SS-02 CF-SS-02 9/27/2013 Field Sample	SS-02 CF-SS-09 9/27/2013 Field Duplicate	
Pesticides											
4,4'-DDD	72-54-8	mg/kg	NE	2.7	7.2	2	--	0.0037U	0.0044U	0.0042U	--
4,4'-DDE	72-55-9	mg/kg	NE	1.9	5.1	1.4	--	0.0037U	0.0044U	0.0042U	--
4,4'-DDT	50-29-3	mg/kg	39	1.9	7	1.7	--	0.0037U	0.0044U	0.0042U	--
Aldrin	309-00-2	mg/kg	2.3	0.038	0.1	0.029	--	0.0019U	0.0023U	0.0022U	--
alpha-BHC	319-84-6	mg/kg	NE	0.1	0.27	0.077	--	0.0019U	0.0023U	0.0022U	--
alpha-Chlordane	5103-71-9	mg/kg	39	1.8	NE	NE	--	0.0019U	0.0023U	0.0022U	--
beta-BHC	319-85-7	mg/kg	NE	0.36	0.96	0.27	--	0.0019U	0.0023U	0.0022U	--
delta-BHC	319-86-8	mg/kg	NE	NE	NE	NE	--	0.0019U	0.0023U	0.0022U	--
Dieldrin	60-57-1	mg/kg	3.9	0.04	0.11	0.03	--	0.0037U	0.0044U	0.0042U	--
Endosulfan I	959-98-8	mg/kg	470	NE	NE	NE	--	0.0019U	0.0023U	0.0022U	--
Endosulfan II	33213-65-9	mg/kg	470	NE	NE	NE	--	0.0037U	0.0044U	0.0042U	--
Endosulfan sulfate	1031-07-8	mg/kg	NE	NE	NE	NE	--	0.0037U	0.0044U	0.0042U	--
Endrin	72-20-8	mg/kg	23	NE	180	18	--	0.0019J (0.0269)	0.0016J (0.0226)	0.0042U	0.0807
Endrin aldehyde	7421-93-4	mg/kg	NE	NE	NE	NE	--	0.0037U	0.0044U	0.0042U	--
Endrin ketone	53494-70-5	mg/kg	NE	NE	NE	NE	--	0.0037U	0.0044U	0.0042U	--
gamma-BHC (Lindane)	58-89-9	mg/kg	23	0.49	2.1	0.52	--	0.0019U	0.0023U	0.0022U	--
gamma-Chlordane	5103-74-2	mg/kg	NE	NE	NE	NE	--	0.0019U	0.0023U	0.0022U	--
Heptachlor	76-44-8	mg/kg	39	0.14	0.38	0.11	--	0.0019U	0.0023U	0.0022U	--
Heptachlor epoxide	1024-57-3	mg/kg	1	0.07	0.19	0.053	--	0.0019U	0.0023U	0.0022U	--
Methoxychlor	72-43-5	mg/kg	390	NE	3100	310	--	0.019U	0.023U	0.022U	--
Toxaphene	8001-35-2	mg/kg	NE	0.58	1.6	0.44	--	0.19U	0.23U	0.22U	--

Notes:

- Bold** The analyte was detected above the method detection limit
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- Result is biased low
- NE None Established
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
- ug/kg micrigram(s) per kilogram
- CRSC Cancer Risk Screening Concentration
- EPA United States Environmental Protection Agency
- RDSC Reference Dose Screening Concentration
- SCDM Superfund Chemical Data Matrix



Soil PCBs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E51

Analyte	CAS.NO	Units	SCDM RDSC	SCDM CRSC	EPA Industrial Soil	EPA Residential Soil	Location	Sample ID	Background Samples		
									SS-01 CF-SS-01 9/27/2013 Field Sample	SS-02 CF-SS-02 9/27/2013 Field Sample	SS-02 CF-SS-09 9/27/2013 Field Duplicate
PCBs											
Aroclor-1016	12674-11-2	ug/kg	NE	NE	21	3.9	--	0.037U	0.044U	0.042U	
Aroclor-1221	11104-28-2	ug/kg	NE	NE	0.54	0.14	--	0.037U	0.044U	0.042U	
Aroclor-1232	11141-16-5	ug/kg	NE	NE	0.54	0.14	--	0.037U	0.044U	0.042U	
Aroclor-1242	53469-21-9	ug/kg	NE	NE	0.74	0.22	--	0.037U	0.044U	0.042U	
Aroclor-1248	12672-29-6	ug/kg	NE	NE	0.74	0.22	--	0.037U	0.044U	0.042U	
Aroclor-1254	11097-69-1	ug/kg	NE	NE	0.74	0.22	--	0.037UJ	0.044U	0.042U	
Aroclor-1260	11096-82-5	ug/kg	NE	NE	0.74	0.22	--	0.037U	0.044U	0.042U	
Aroclor-1262	37324-23-5	ug/kg	NE	NE	NE	NE	--	0.037U	0.044U	0.042U	
Aroclor-1268	11100-14-4	ug/kg	NE	NE	NE	NE	--	0.037U	0.044U	0.042U	

Notes:

NE None Established

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.

UJ The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

ug/kg micrigram(s) per kilogram

CRSC Cancer Risk Screening Concentration

EPA United States Environmental Protection Agency

RDSC Reference Dose Screening Concentration

SCDM Superfund Chemical Data Matrix



Table E52

Soil TAL Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	SCDM RDSC	SCDM CRSC	EPA Industrial Soil	EPA Residential Soil	Location Sample ID	Background Samples			Three Times Background Concntration
								SS-01 CF-SS-01	SS-02 CF-SS-02	SS-02 CF-SS-09	
Metals											
Aluminum	7429-90-5	mg/kg	NE	NE	990000	77000	--	11100	19900	19500	59700
Antimony	7440-36-0	mg/kg	31	NE	410	31	--	6.4UJ	6.5UJ	7.7UJ	--
Arsenic	7440-38-2	mg/kg	23	0.43	2.4	0.61	--	2.2	6	6.3	18.9
Barium	7440-39-3	mg/kg	5500	NE	190000	15000	--	275	564	524	1692
Beryllium	7440-41-7	mg/kg	160	NE	2000	160	--	0.53U	0.63	0.64U	1.89
Cadmium	7440-43-9	mg/kg	39	NE	800	70	--	0.53U	0.54U	0.64U	--
Calcium	7440-70-2	mg/kg	NE	NE	NE	NE	--	1380	4490	3870	13470
Chromium	7440-47-3	mg/kg	230	NE	NE	NE	--	8.8	9.5	10.1	30.3
Cobalt	7440-48-4	mg/kg	NE	NE	300	23	--	6.7	5.8	6.4U	21.1
Copper	7440-50-8	mg/kg	NE	NE	41000	3100	--	4.1	12.4	10.6	37.2
Cyanide	57-12-5	mg/kg	1600	NE	140	22	--	0.57UJ	0.16J (0.248)	0.16J (0.248)	0.744
Iron	7439-89-6	mg/kg	NE	NE	720000	55000	--	12700	16900	19600	58800
Lead	7439-92-1	mg/kg	NE	NE	800	400	--	8.6	16.1J (23.184)	15.3	69.55
Magnesium	7439-95-4	mg/kg	NE	NE	NE	NE	--	8230	6550	8800	26400
Manganese	7439-96-5	mg/kg	NE	NE	23000	1800	--	1570	1300	1200	4710
Mercury	7439-97-6	mg/kg	NE	NE	43	10	--	0.0067J (0.0123)	0.021J (0.038)	0.017J (0.031)	0.114
Nickel	7440-02-0	mg/kg	1600	NE	20000	1500	--	8.9	13.8	13.6	41.4
Potassium	7440-09-7	mg/kg	NE	NE	NE	NE	--	916	1590	1130	4770
Selenium	7782-49-2	mg/kg	390	NE	5100	390	--	3.7U	3.8UJ	4.5U	--
Silver	7440-22-4	mg/kg	390	NE	5100	390	--	1.1U	1.1U	1.3U	--
Sodium	7440-23-5	mg/kg	NE	NE	NE	NE	--	534U	544U	638U	--
Thallium	7440-28-0	mg/kg	NE	NE	10	0.78	--	2.7U	2.7U	3.2U	--
Vanadium	7440-62-2	mg/kg	550	NE	5100	390	--	8.1	14.5	14.9	44.7
Zinc	7440-66-6	mg/kg	23000	NE	310000	23000	--	67.9	92.6	91.2	277.8

Notes:

- Bold** The analyte was detected above the method detection limit
- J The associated value is an estimated quantity.
- Result is biased low
- NE None Established
- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
- mg/kg milligram(s) per kilogram
- CRSC Cancer Risk Screening Concentration
- EPA United States Environmental Protection Agency
- RDSC Reference Dose Screening Concentration
- SCDM Superfund Chemical Data Matrix



Soil General Chemistry Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E53

Analyte	CAS NO	Units	SCDM	SCDM	EPA Industrial Soil	EPA Residential Soil	Location Sample ID	Background Samples			Three Times Background Concentration	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08
								SS-01 CF-SS-01 9/27/2013 Field Sample	SS-02 CF-SS-02 9/27/2013 Field Sample	SS-02 CF-SS-09 9/27/2013 Field Duplicate							
GENCHEM																	
Fluoride	16984-48-8	mg/kg	NE	NE	41000	3100	--	2.9	3.8	2.9	11.4	4.8	3.7	15.7	15.2	27.6	6.3

Notes:

Bold The analyte was detected above the method detection limit

Bold The analyte concentration exceeds 3X background and is significant to the Site

NE None Established

mg/kg milligram(s) per kilogram

CRSC Cancer Risk Screening Concentration

EPA United States Environmental Protection Agency

RDSC Reference Dose Screening Concentration

SCDM Superfund Chemical Data Matrix



Table E55

Quality Assurance Water SVOCs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS#	Units	Location Sample ID	Date Type	EB-01 Equipment: Blank 1 9/26/2013 Field Sample	FB-01 Field Blank 1 9/26/2013 Field Sample	FB-02 Field Blank 2 9/26/2013 Field Sample
SVOCs							
1,1'-Biphenyl	92-52-4	ug/L	--	--	SU	SU	SU
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/L	--	--	SU	SU	SU
2,2'-Oxybis(1-chloropropane)	108-60-1	ug/L	--	--	SU	SU	SU
2,3,4,6-Tetrachlorophenol	58-90-2	ug/L	--	--	SU	SU	SU
2,4,5-Trichlorophenol	95-95-4	ug/L	--	--	SU	SU	SU
2,4,6-Trichlorophenol	88-06-2	ug/L	--	--	SU	SU	SU
2,4-Dichlorophenol	120-83-2	ug/L	--	--	SU	SU	SU
2,4-Dimethylphenol	105-67-9	ug/L	--	--	SU	SU	SU
2,4-Dinitrophenol	51-28-5	ug/L	--	--	10U	10U	10U
2,4-Dinitrotoluene	121-14-2	ug/L	--	--	SU	SU	SU
2,6-Dinitrotoluene	606-20-2	ug/L	--	--	SU	SU	SU
2-Chloronaphthalene	91-58-7	ug/L	--	--	SU	SU	SU
2-Chlorophenol	95-57-8	ug/L	--	--	SU	SU	SU
2-Methylnaphthalene	91-57-6	ug/L	--	--	SR	SR	SR
2-Methylphenol	95-48-7	ug/L	--	--	SU	SU	SU
2-Nitroaniline	88-74-4	ug/L	--	--	10U	10U	10U
2-Nitrophenol	88-75-5	ug/L	--	--	SU	SU	SU
3,3'-Dichlorobenzidine	91-94-1	ug/L	--	--	5R	5R	5R
3-Nitroaniline	99-09-2	ug/L	--	--	10U	10U	10U
4,6-Dinitro-2-methylphenol	534-52-1	ug/L	--	--	10U	10U	10U
4-Bromophenyl-phenylether	101-55-3	ug/L	--	--	SU	SU	SU
4-Chloro-3-methylphenol	59-50-7	ug/L	--	--	SU	SU	SU
4-Chloroaniline	106-47-8	ug/L	--	--	5R	5R	5R
4-Chlorophenyl-phenylether	7005-72-3	ug/L	--	--	SU	SU	SU
4-Methylphenol	106-44-5	ug/L	--	--	SU	SU	SU
4-Nitroaniline	100-01-6	ug/L	--	--	10U	10U	10U
4-Nitrophenol	100-02-7	ug/L	--	--	10U	10U	10U
Acenaphthene	83-32-9	ug/L	--	--	SR	SR	SR
Acenaphthylene	208-96-8	ug/L	--	--	SR	SR	SR
Acetophenone	98-86-2	ug/L	--	--	SU	SU	SU
Anthracene	120-12-7	ug/L	--	--	SR	SR	SR
Atrazine	1912-24-9	ug/L	--	--	SU	SU	SU
Benzaldehyde	100-52-7	ug/L	--	--	SUJ	SUJ	SUJ
Benz(a)anthracene	56-55-3	ug/L	--	--	SR	SR	SR
Benz(a)pyrene	50-32-8	ug/L	--	--	SR	SR	SR
Benz(b)fluoranthene	205-99-2	ug/L	--	--	SR	SR	SR
Benzol(g,h,i)perylene	191-24-2	ug/L	--	--	SR	SR	SR
Benzol(k)fluoranthene	207-08-9	ug/L	--	--	SR	SR	SR
Bis(2-chloroethoxy)methane	111-91-1	ug/L	--	--	SU	SU	SU
Bis(2-chloroethyl)ether	111-44-4	ug/L	--	--	SU	SU	SU
Bis(2-ethylhexyl)phthalate	117-81-7	ug/L	--	--	5.4	SU	SU
Butylbenzylphthalate	85-68-7	ug/L	--	--	SU	SU	SU
Caprolactam	105-60-2	ug/L	--	--	SU	SU	SU
Carbazole	86-74-8	ug/L	--	--	SU	SU	SU
Chrysene	218-01-9	ug/L	--	--	SR	SR	SR
Dibenzo(a,h)anthracene	53-70-3	ug/L	--	--	SR	SR	SR
Dibenzofuran	132-64-9	ug/L	--	--	SU	SU	SU
Diethylphthalate	84-66-2	ug/L	--	--	SU	SU	SU
Dimethylphthalate	131-11-3	ug/L	--	--	SU	SU	SU
Di-n-butylphthalate	84-74-2	ug/L	--	--	SU	SU	SU
Di-n-octylphthalate	117-84-0	ug/L	--	--	SU	SU	SU
Fluoranthene	206-44-0	ug/L	--	--	SR	SR	SR
Fluorene	86-73-7	ug/L	--	--	SR	SR	SR
Hexachlorobenzene	118-74-1	ug/L	--	--	SU	SU	SU
Hexachlorobutadiene	87-68-3	ug/L	--	--	SU	SU	SU
Hexachlorocyclopentadiene	77-47-4	ug/L	--	--	SR	SR	SR
Hexachloroethane	67-72-1	ug/L	--	--	SU	SU	SU
Indeno[1,2,3-cd]pyrene	193-39-5	ug/L	--	--	SR	SR	SR
Isophorone	78-59-1	ug/L	--	--	SUJ	SUJ	SUJ
Naphthalene	91-20-3	ug/L	--	--	SR	SR	SR
Nitrobenzene	98-95-3	ug/L	--	--	SU	SU	SU
N-Nitroso-di-n-propylamine	621-64-7	ug/L	--	--	SU	SU	SU
N-Nitrosodiphenylamine	86-30-6	ug/L	--	--	SU	SU	SU
Pentachlorophenol	87-86-5	ug/L	--	--	10U	10U	10U
Phenanthrene	85-01-8	ug/L	--	--	SR	SR	SR
Phenol	108-95-2	ug/L	--	--	SUJ	SUJ	SUJ
Pyrene	129-00-0	ug/L	--	--	SR	SR	SR

Notes:

Bold

The analyte was detected above the method detection limit

R

The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

U

The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.

UJ

The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

ug/L

microgram(s) per liter

Table E56

Quality Assurance Water PAHs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	Location Sample ID Date Type	EB-01 Equipment Blank 1 9/26/2013 Field Sample	FB-01 Field Blank 1 9/25/2013 Field Sample	FB-02 Field Blank 2 9/26/2013 Field Sample
SVOC SIM						
2-Methylnaphthalene	91-57-6	ug/L	--	0.05J	0.1U	0.1U
Acenaphthene	83-32-9	ug/L	--	0.1U	0.1U	0.1U
Acenaphthylene	208-96-8	ug/L	--	0.1U	0.1U	0.1U
Anthracene	120-12-7	ug/L	--	0.1U	0.1U	0.1U
Benzo(a)anthracene	56-55-3	ug/L	--	0.1U	0.1U	0.1U
Benzo(a)pyrene	50-32-8	ug/L	--	0.1U	0.1U	0.1U
Benzo(b)fluoranthene	205-99-2	ug/L	--	0.1U	0.1U	0.1U
Benzo(g,h,i)perylene	191-24-2	ug/L	--	0.1U	0.1U	0.1U
Benzo(k)fluoranthene	207-08-9	ug/L	--	0.1U	0.1U	0.1U
Chrysene	218-01-9	ug/L	--	0.1U	0.1U	0.1U
Dibeno(a,h)anthracene	53-70-3	ug/L	--	0.1U	0.1U	0.1U
Fluoranthene	206-44-0	ug/L	--	0.1U	0.1U	0.1U
Fluorene	86-73-7	ug/L	--	0.1U	0.1U	0.1U
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	--	0.1U	0.1U	0.1U
Naphthalene	91-20-3	ug/L	--	0.07J	0.12U	0.1U
Pentachlorophenol	87-86-5	ug/L	--	0.2R	0.2R	0.2R
Phenanthrene	85-01-8	ug/L	--	0.07J	0.1U	0.1U
Pyrene	129-00-0	ug/L	--	0.1U	0.1U	0.1U

Notes:

- Bold** The analyte was detected above the method detection limit
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- R The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.
- ug/L microgram(s) per liter



Quality Assurance Water Pesticides Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	Location Sample ID Date Type	EB-01 Equipment Blank 1 9/26/2013 Field Sample	FB-01 Field Blank 1 9/25/2013 Field Sample	FB-02 Field Blank 2 9/26/2013 Field Sample
Pesticides						
4,4'-DDD	72-54-8	ug/L	--	0.1U	0.1U	0.1U
4,4'-DDE	72-55-9	ug/L	--	0.1U	0.1U	0.1U
4,4'-DDT	50-29-3	ug/L	--	0.1U	0.1U	0.1U
ALDRIN	309-00-2	ug/L	--	0.05U	0.051U	0.05U
ALPHA-BHC	319-84-6	ug/L	--	0.05U	0.051U	0.05U
ALPHA-CHLORDANE	5103-71-9	ug/L	--	0.05U	0.051U	0.05U
BETA-BHC	319-85-7	ug/L	--	0.05U	0.051U	0.05U
DELTA-BHC	319-86-8	ug/L	--	0.05U	0.051U	0.05U
DIELDRIN	60-57-1	ug/L	--	0.1U	0.1U	0.1U
ENDOSULFAN I	959-98-8	ug/L	--	0.05U	0.051U	0.05U
ENDOSULFAN II	33213-65-9	ug/L	--	0.1U	0.1U	0.1U
ENDOSULFAN SULFATE	1031-07-8	ug/L	--	0.1U	0.1U	0.1U
ENDRIN	72-20-8	ug/L	--	0.1U	0.1U	0.1U
ENDRIN ALDEHYDE	7421-93-4	ug/L	--	0.1U	0.1U	0.1U
ENDRIN KETONE	53494-70-5	ug/L	--	0.1U	0.1U	0.1U
GAMMA-BHC (LINDANE)	58-89-9	ug/L	--	0.05U	0.051U	0.05U
GAMMA-CHLORDANE	5103-74-2	ug/L	--	0.05U	0.051U	0.05U
HEPTACHLOR	76-44-8	ug/L	--	0.05U	0.051U	0.05U
HEPTACHLOR EPOXIDE	1024-57-3	ug/L	--	0.05U	0.051U	0.05U
METHOXYCHLOR	72-43-5	ug/L	--	0.5U	0.51U	0.5U
TOXAPHENE	8001-35-2	ug/L	--	5U	5.1U	5U

Notes:

U

The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.

ug/L

microgram(s) per liter



Table E58

Quality Assurance Water PCBs Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	Location Sample ID Date Type	EB-01 Equipment Blank 1 9/26/2013 Field Sample	FB-01 Field Blank 1 9/25/2013 Field Sample	FB-02 Field Blank 2 9/26/2013 Field Sample
PCBs						
Aroclor-1016	12674-11-2	ug/L	--	1UJ	1UJ	1UJ
Aroclor-1221	11104-28-2	ug/L	--	1UJ	1UJ	1UJ
Aroclor-1232	11141-16-5	ug/L	--	1UJ	1UJ	1UJ
Aroclor-1242	53469-21-9	ug/L	--	1UJ	1UJ	1UJ
Aroclor-1248	12672-29-6	ug/L	--	1UJ	1UJ	1UJ
Aroclor-1254	11097-69-1	ug/L	--	1UJ	1UJ	1UJ
Aroclor-1260	11096-82-5	ug/L	--	1UJ	1UJ	1UJ
Aroclor-1262	37324-23-5	ug/L	--	1UJ	1UJ	1UJ
Aroclor-1268	11100-14-4	ug/L	--	1UJ	1UJ	1UJ

Notes:

UJ The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

ug/L microgram(s) per liter



Table E59

Quality Assurance Water Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	Location Sample ID Date Type	EB-01 Equipment Blank 1 9/26/2013 Field Sample	FB-01 Field Blank 1 9/25/2013 Field Sample	FB-02 Field Blank 2 9/26/2013 Field Sample
Metals						
Aluminum	7429-90-5	ug/L	--	12J	20UJ	20U
Antimony	7440-36-0	ug/L	--	2U	2UJ	2U
Arsenic	7440-38-2	ug/L	--	1U	1UJ	1U
Barium	7440-39-3	ug/L	--	10U	10UJ	10U
Beryllium	7440-41-7	ug/L	--	1U	1UJ	1U
Cadmium	7440-43-9	ug/L	--	1U	1UJ	1U
Calcium	7440-70-2	ug/L	--	885J-	500UJ	500U
Chromium	7440-47-3	ug/L	--	2U	2UJ	2U
Cobalt	7440-48-4	ug/L	--	1U	1UJ	1U
Copper	7440-50-8	ug/L	--	2U	2UJ	2U
Cyanide	57-12-5	ug/L	--	10UJ	10UJ	10UJ
Iron	7439-89-6	ug/L	--	200U	200UJ	200U
Lead	7439-92-1	ug/L	--	1U	1UJ	1U
Magnesium	7439-95-4	ug/L	--	500U	500UJ	500U
Manganese	7439-96-5	ug/L	--	1U	1UJ	1U
Mercury	7439-97-6	ug/L	--	0.2U	0.014J	0.2U
Nickel	7440-02-0	ug/L	--	1.6J-	1UJ	1U
Potassium	7440-09-7	ug/L	--	500U	500U	500U
Selenium	7782-49-2	ug/L	--	5U	5U	5U
Silver	7440-22-4	ug/L	--	1U	1U	1U
Sodium	7440-23-5	ug/L	--	3980J-	500U	500U
Thallium	7440-28-0	ug/L	--	1U	1U	1U
Vanadium	7440-62-2	ug/L	--	1.6J	5UJ	5U
Zinc	7440-66-6	ug/L	--	6.9J-	0.94J	1.3J

Notes:

- Bold** The analyte was detected above the reporting limit
- J The associated value is an estimated quantity.
- Result is biased low
- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

ug/L microgram(s) per liter

Table E60

Quality Assurance Water Dissolved Metals Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Analyte	CAS.NO	Units	Location Sample ID Date Type	EB-01 Equipment Blank 1 9/26/2013 Field Sample	FB-01 Field Blank 1 9/25/2013 Field Sample	FB-02 Field Blank 2 9/26/2013 Field Sample
Metals, Dissolved						
Aluminum	7429-90-5	ug/L	--	20U	20U	20U
Antimony	7440-36-0	ug/L	--	2U	2U	2U
Arsenic	7440-38-2	ug/L	--	1U	1U	1U
Barium	7440-39-3	ug/L	--	10U	10U	10U
Beryllium	7440-41-7	ug/L	--	1U	1U	1U
Cadmium	7440-43-9	ug/L	--	1U	1U	1U
Calcium	7440-70-2	ug/L	--	588	44.3J	500U
Chromium	7440-47-3	ug/L	--	2U	2U	2U
Cobalt	7440-48-4	ug/L	--	1U	1U	1U
Copper	7440-50-8	ug/L	--	2U	2U	2U
Iron	7439-89-6	ug/L	--	200U	200U	200U
Lead	7439-92-1	ug/L	--	1U	1U	1U
Magnesium	7439-95-4	ug/L	--	500U	500U	500U
Manganese	7439-96-5	ug/L	--	1.3	1U	1U
Mercury	7439-97-6	ug/L	--	0.2U	0.2U	0.2U
Nickel	7440-02-0	ug/L	--	1U	1U	1U
Potassium	7440-09-7	ug/L	--	500U	500U	500U
Selenium	7782-49-2	ug/L	--	5U	5U	5U
Silver	7440-22-4	ug/L	--	1U	1U	1U
Sodium	7440-23-5	ug/L	--	3030	500UJ	500U
Thallium	7440-28-0	ug/L	--	1U	1U	1U
Vanadium	7440-62-2	ug/L	--	5U	5U	5U
Zinc	7440-66-6	ug/L	--	4.5J	1.6J	0.68J

Notes:

- Bold** The analyte was detected above the reporting limit
J The associated value is an estimated quantity.
U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

ug/L microgram(s) per liter



Quality Assurance Water General Chemistry Analytical Results Summary
Columbia Falls Aluminum Company
Aluminum Smelter Facility
Columbia Falls, Flathead County, Montana

Table E61

Analyte	CAS.NO	Units	Location Sample ID Date Type	EB-01 Equipment Blank 1 9/26/2013 Field Sample	FB-01 Field Blank 1 9/25/2013 Field Sample	FB-02 Field Blank 2 9/26/2013 Field Sample
GENCHEM						
Fluoride	16984-48-8	ug/L	--	100U	100U	100U
Nitrate/Nitrite as N	NA	ug/L	--	200U	200U	200U

Notes:

U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

ug/L microgram(s) per liter

